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EASTERN—WESTERN ARCTIC SEA ICE ANALYSIS 1981

**PREPARED BY
NAVAL POLAR OCEANOGRAPHY CENTER,
SUITLAND, MD**

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FOREWORD

The U.S. Navy has a long and colorful history of polar exploration and currently is an active participant in the growing national activity in the Arctic and Antarctic. The strategic importance and increased demand for the natural resources of these areas have resulted in a greater requirement for environmental information. In 1976, the National Oceanic and Atmospheric Administration (NOAA) joined the Navy in forming a Joint Ice Center (JIC) to combine efforts and resources in sea ice analysis and forecasting.

Through 1972, reliable sea ice information in the polar regions was based on a relatively few shore station and ship reports augmented by limited aerial reconnaissance data. These data were further restricted mainly to the relatively small areas observed primarily during the ship operating seasons. The advent of high resolution satellite imagery combined with the ground truth of conventional observations has in recent years enabled a description of the polar ice fields on a semi-synoptic scale in both polar regions.

This publication is the eighth in a continuing yearly series of Arctic sea ice atlases prepared in the Joint Ice Center at the Naval Polar Oceanography Center, Suitland. The atlas contains weekly charts depicting Northern Hemisphere and Great Lakes ice conditions and extents. The information presented was prepared under operational time constraints principally from satellite imagery supplemented by conventional observations. The Great Lakes ice analyses are derived principally from information provided by the National Weather Service Forecast Office, Ann Arbor, Michigan. Table I located on the inside back cover summarizes satellite data availability for 1981.

The purpose of this publication is to provide the most reliable weekly sea ice information with the most reliable weekly limitations and other various forms of ice procedures:

(a.) Conventional reconnaissance observation timeliness.

(b.) Satellite data the most recent and conventional with satellite.

(c.) Where sufficient limit, an estimated availability the ice ice drift data and no data availability.

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FOREWORD

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The purpose of this atlas is to provide operators and researchers with reliable weekly hemispheric ice analyses. Satellite data limitations and other difficulties involved in manually synthesizing various forms of ice data have evolved the following analysis procedures:

(a.) Conventional shore station, ship and aerial ice reconnaissance observations are plotted on base charts and evaluated for timeliness.

(b.) Satellite data is analyzed for ice information content, with the most recent and highest resolution considered first. Synthesis of conventional with satellite data yields the final analysis.

(c.) Where sufficient data is not available to define the sea ice limit, an estimated boundary is depicted. After one week of no data availability the ice edge position is based on analyzed theoretical ice drift data and other diagnostic aids. During subsequent weeks of no data availability the ice edges approach seasonal mean positions.

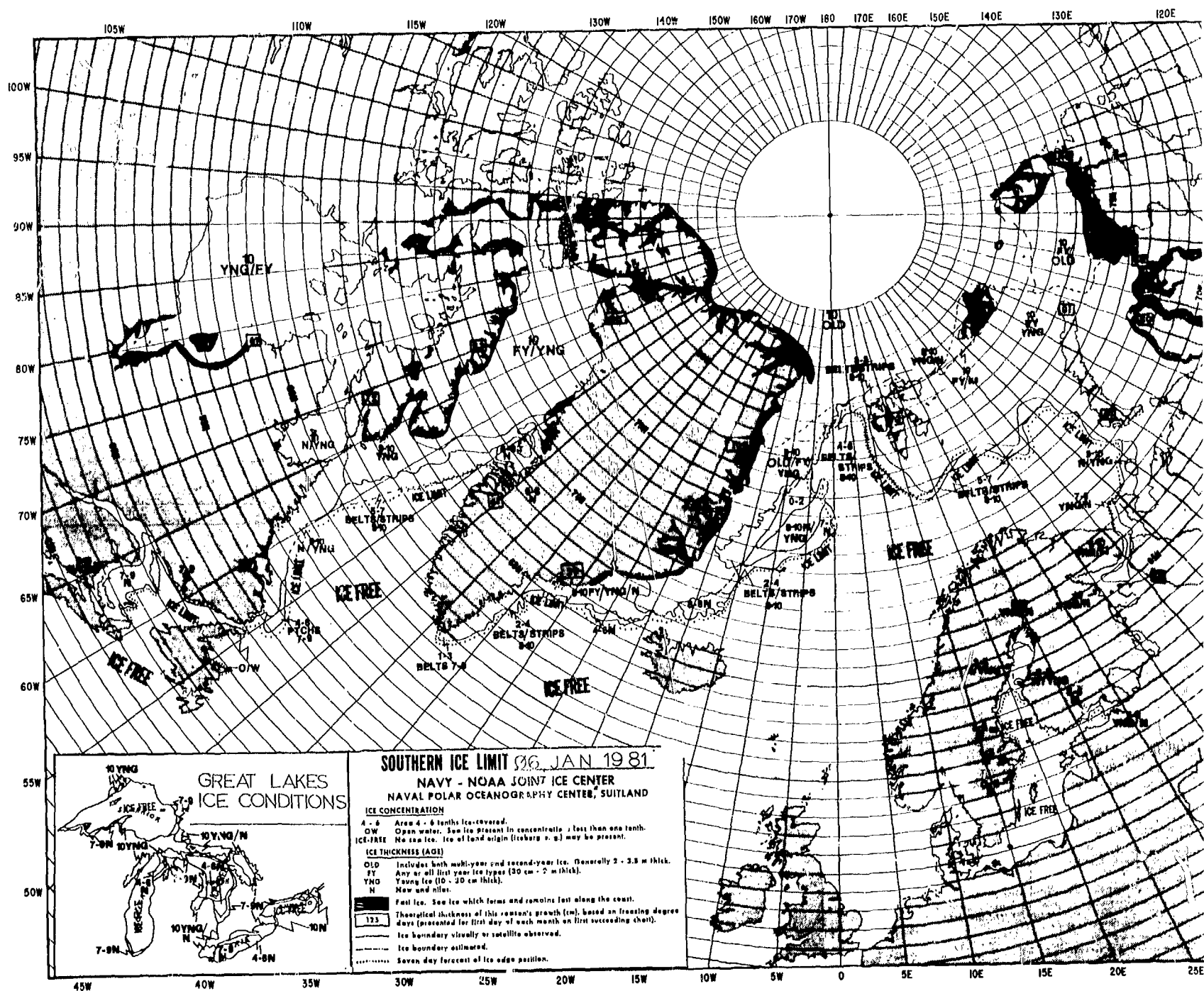
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Washington, DC 20390

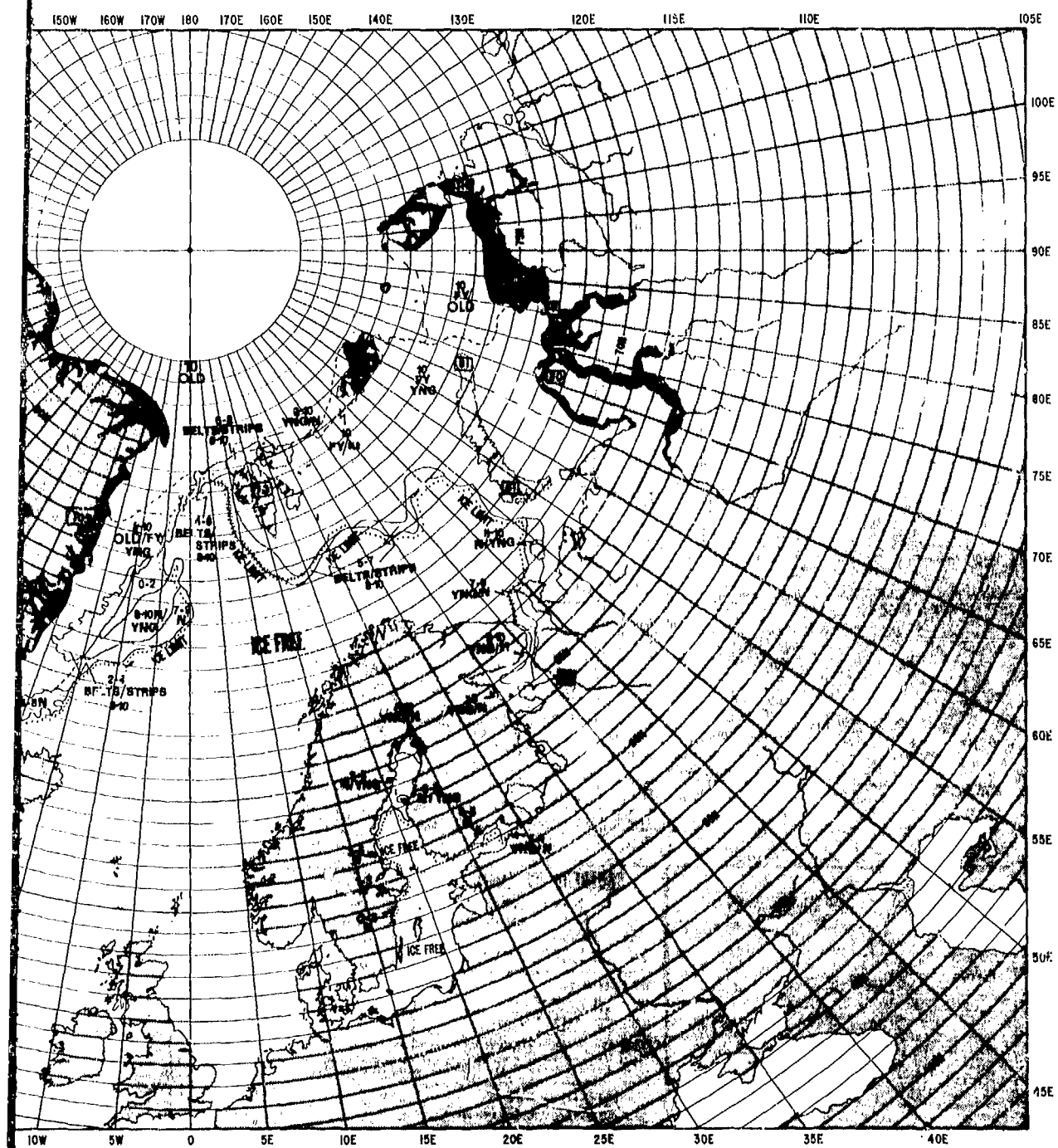


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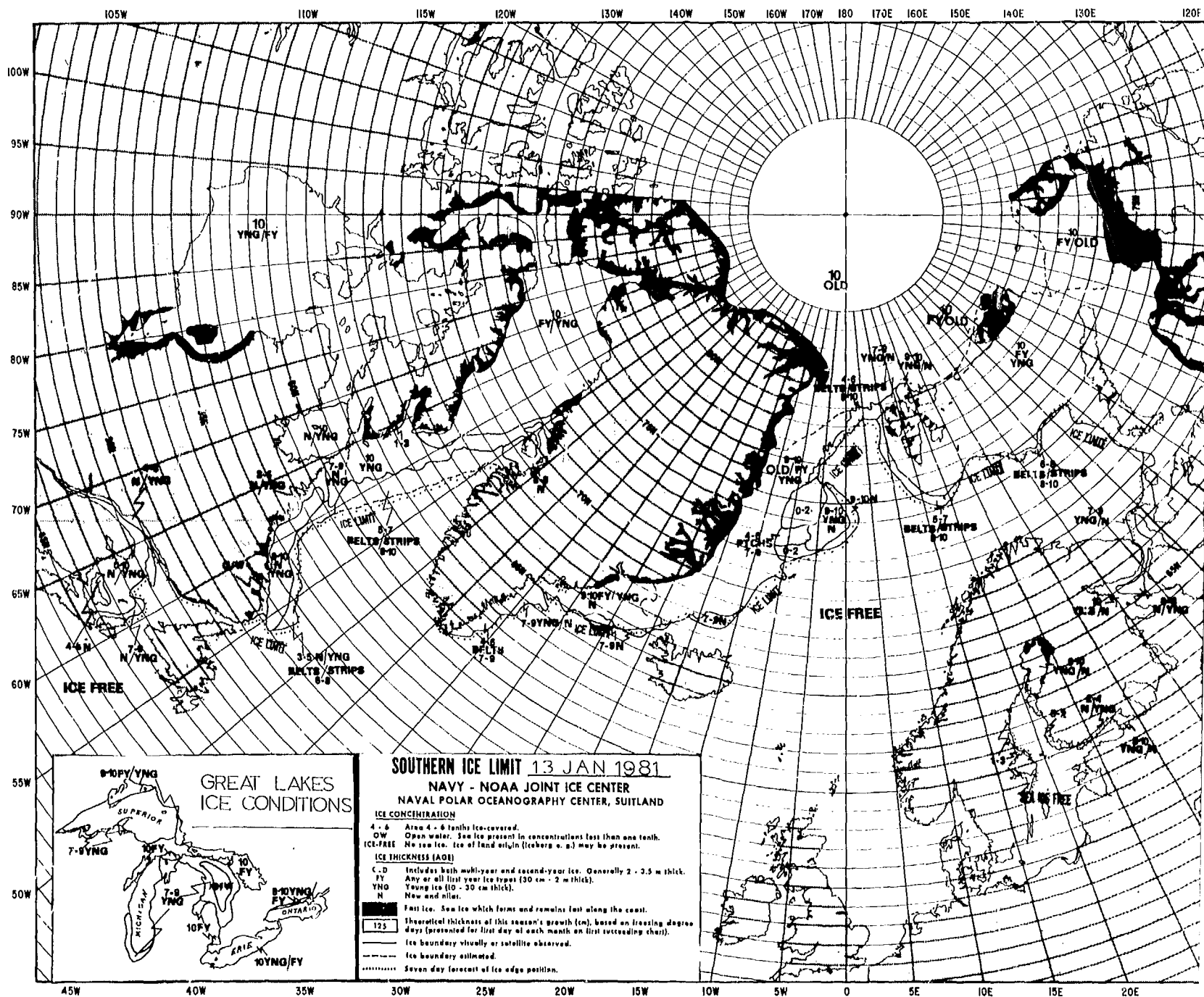
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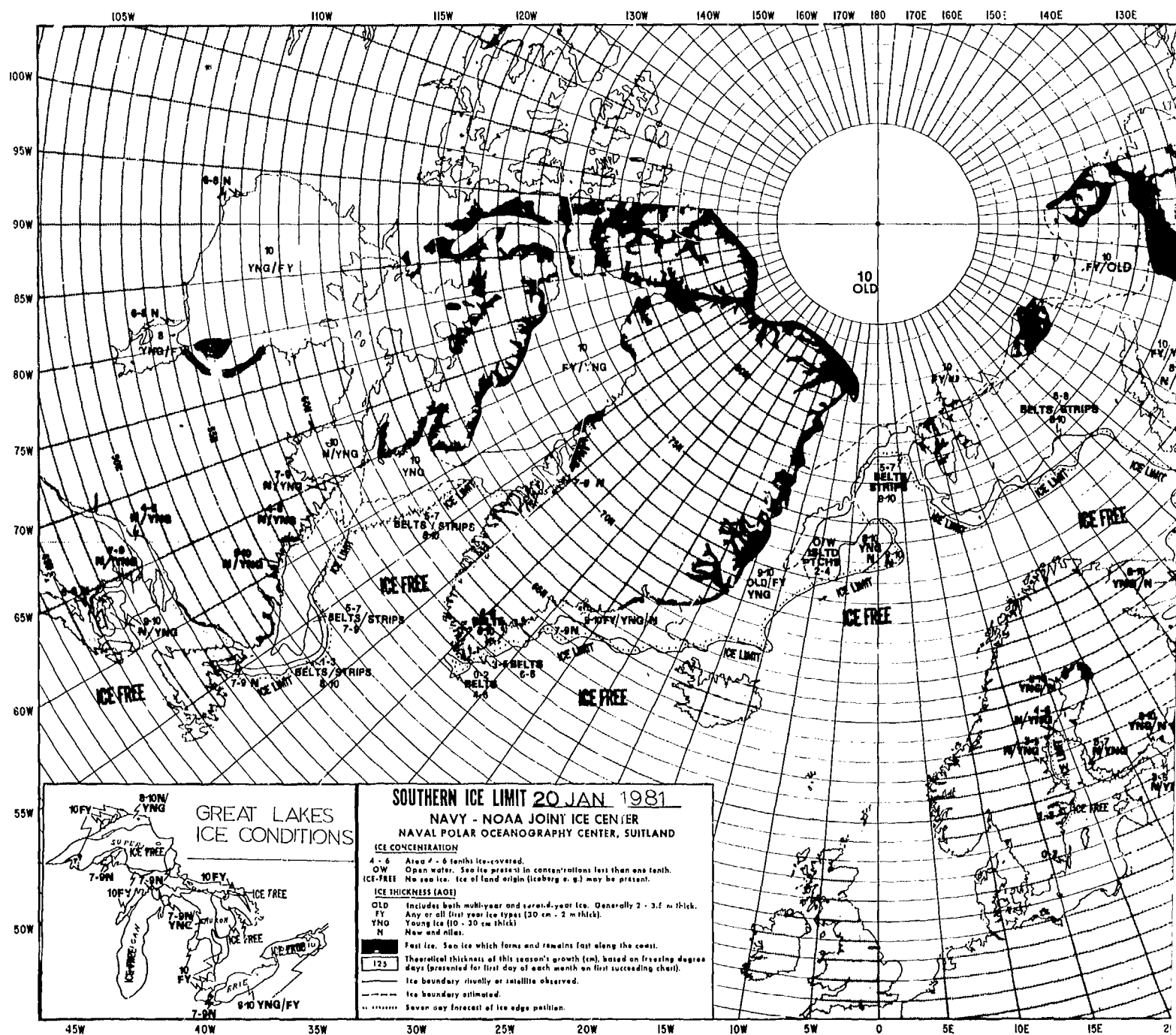
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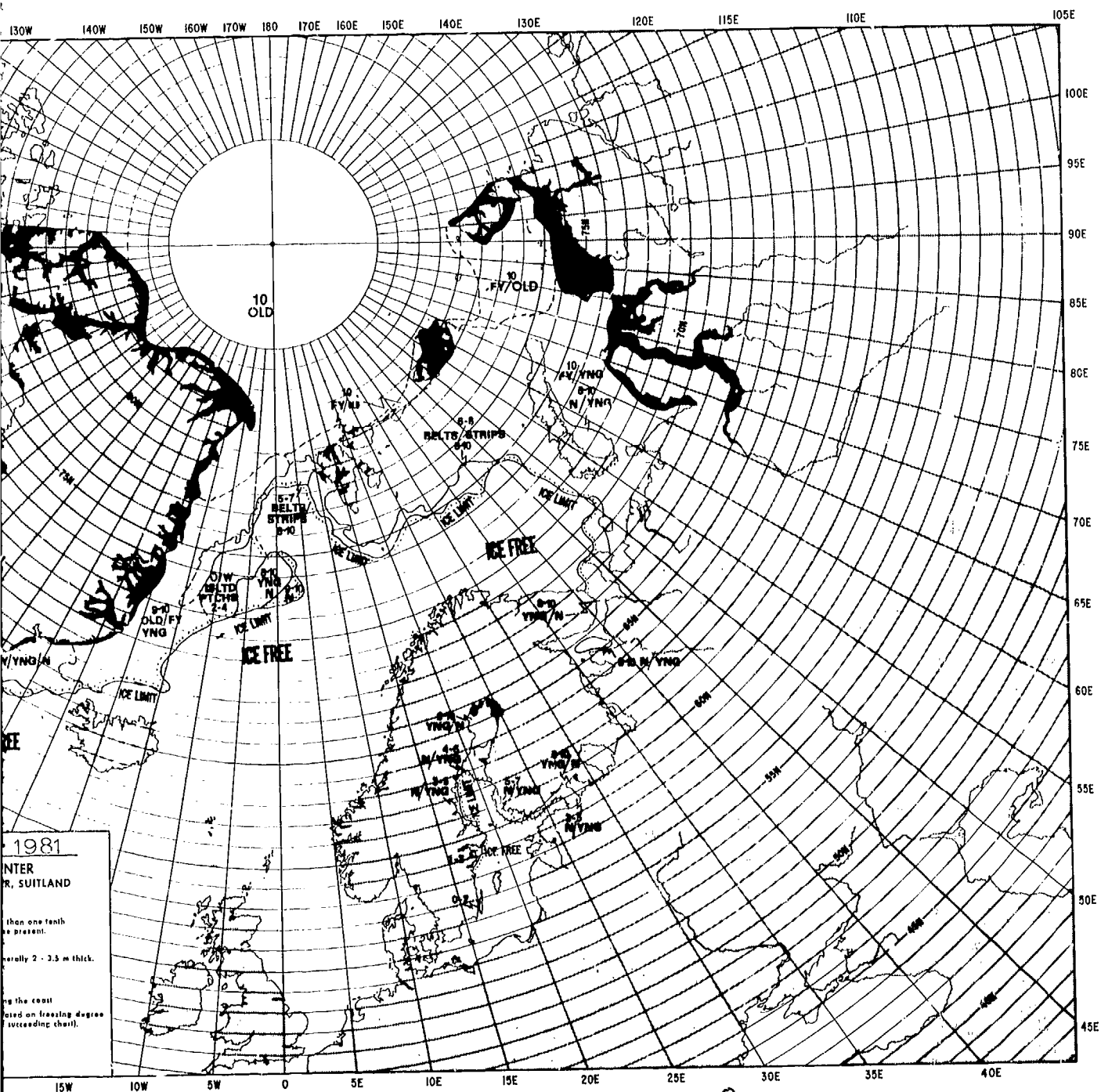


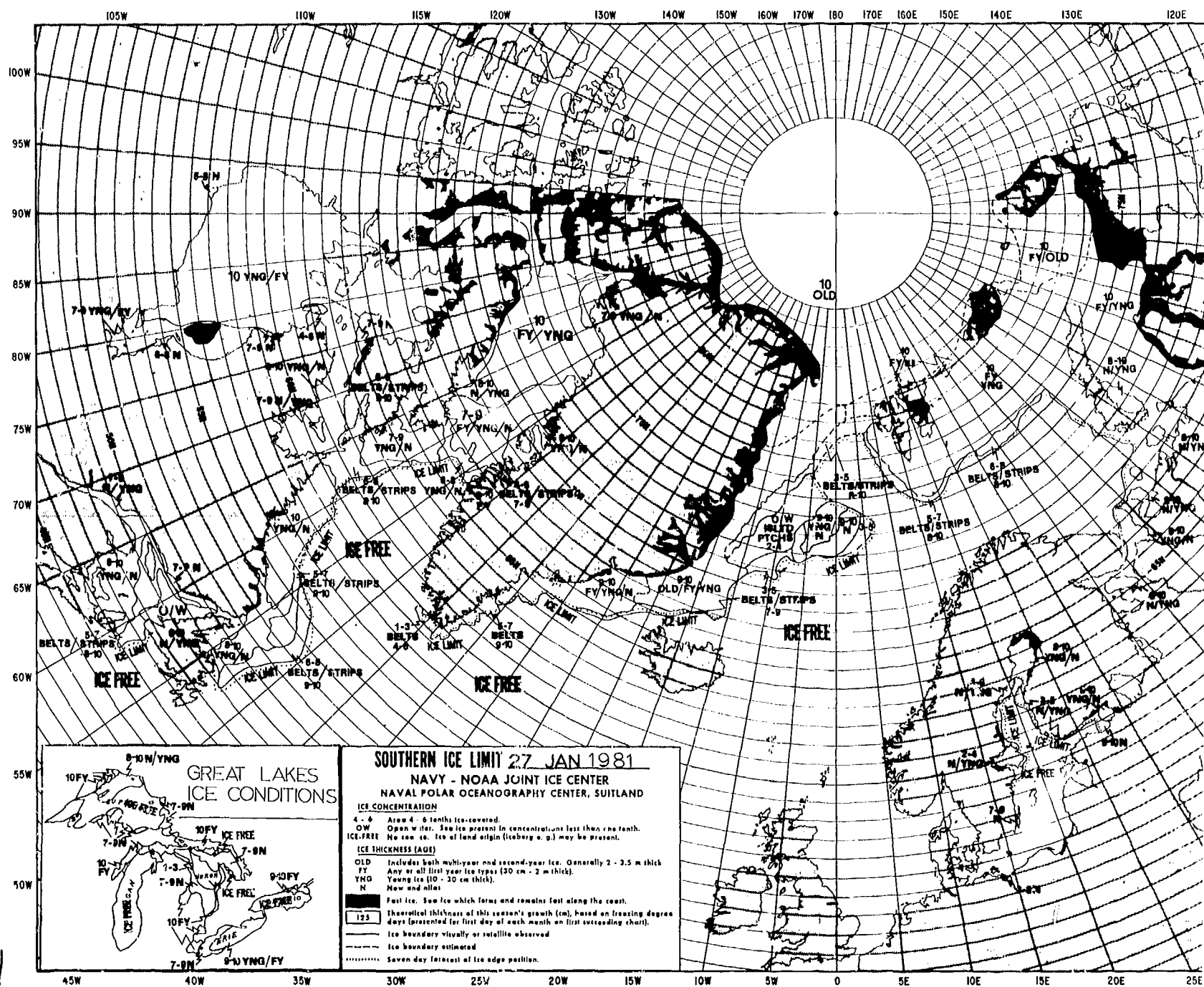


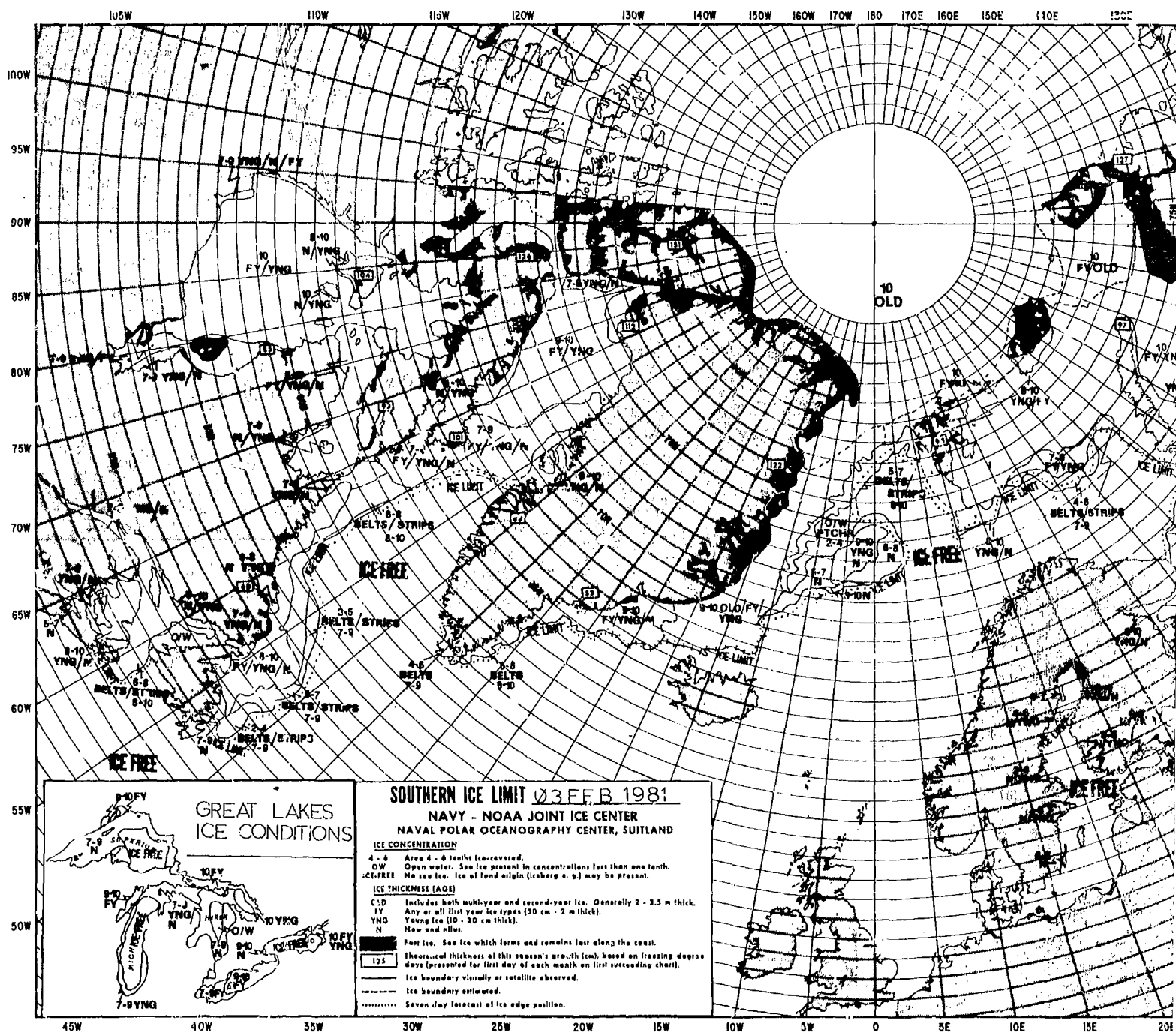
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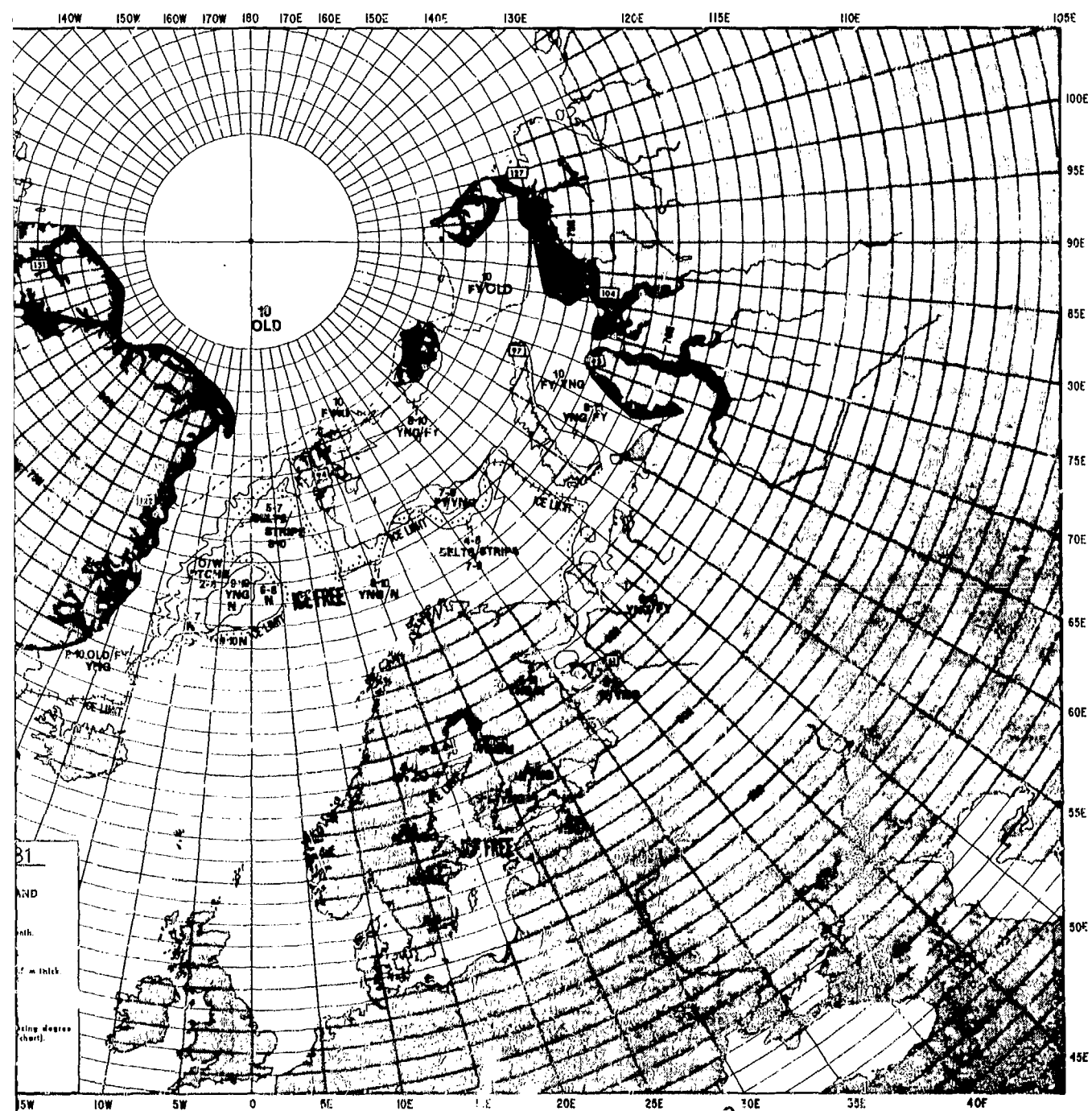




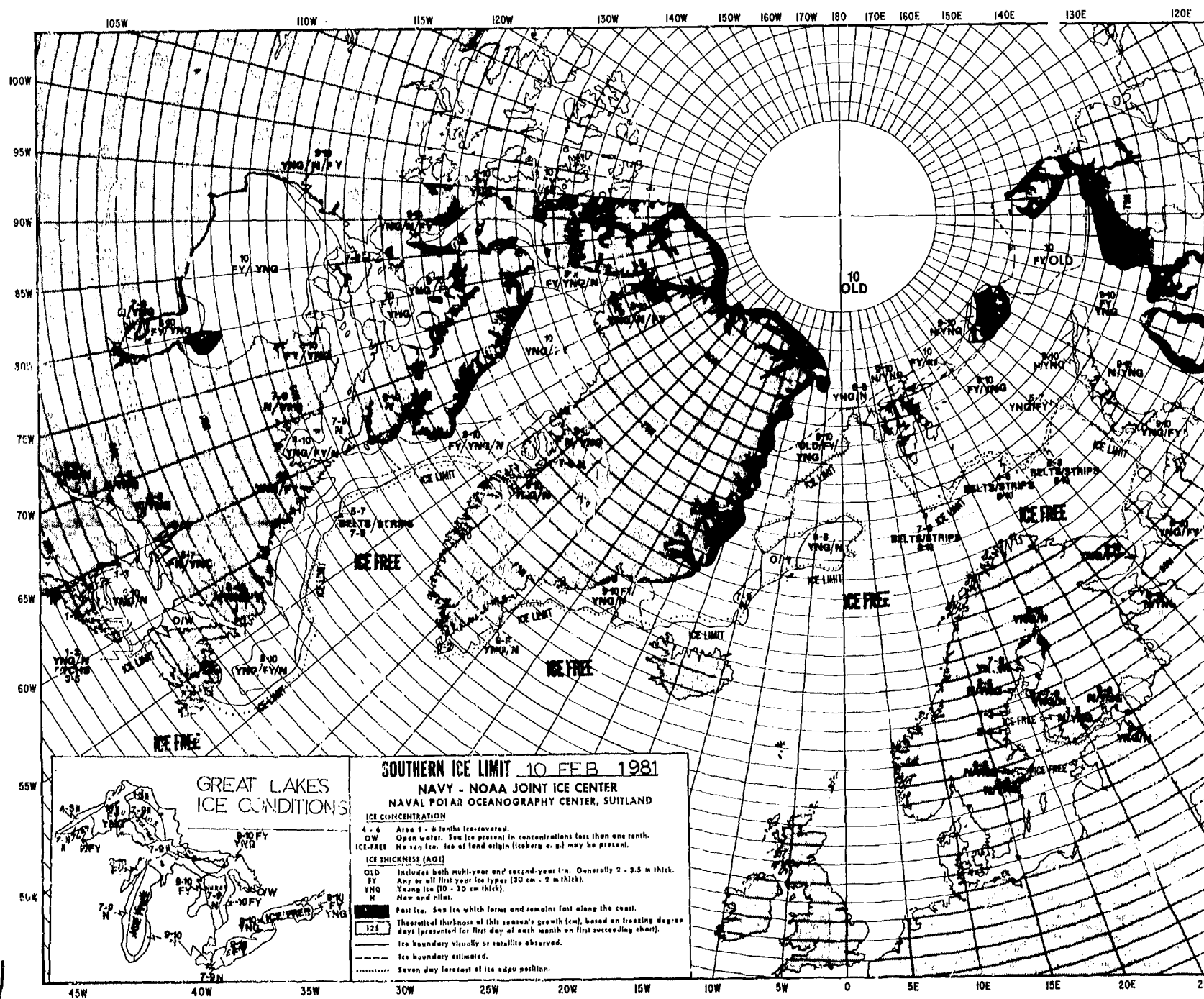


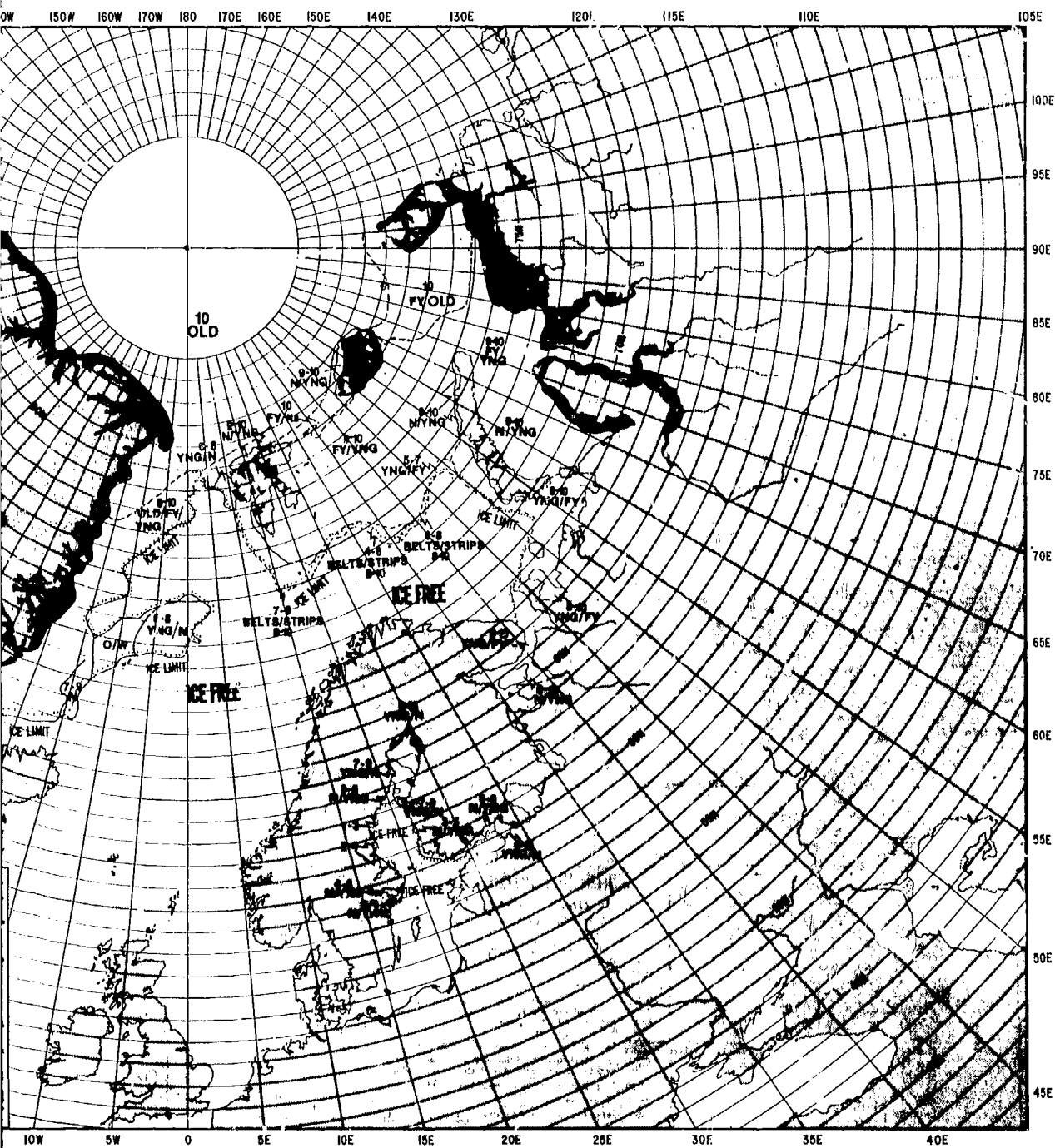


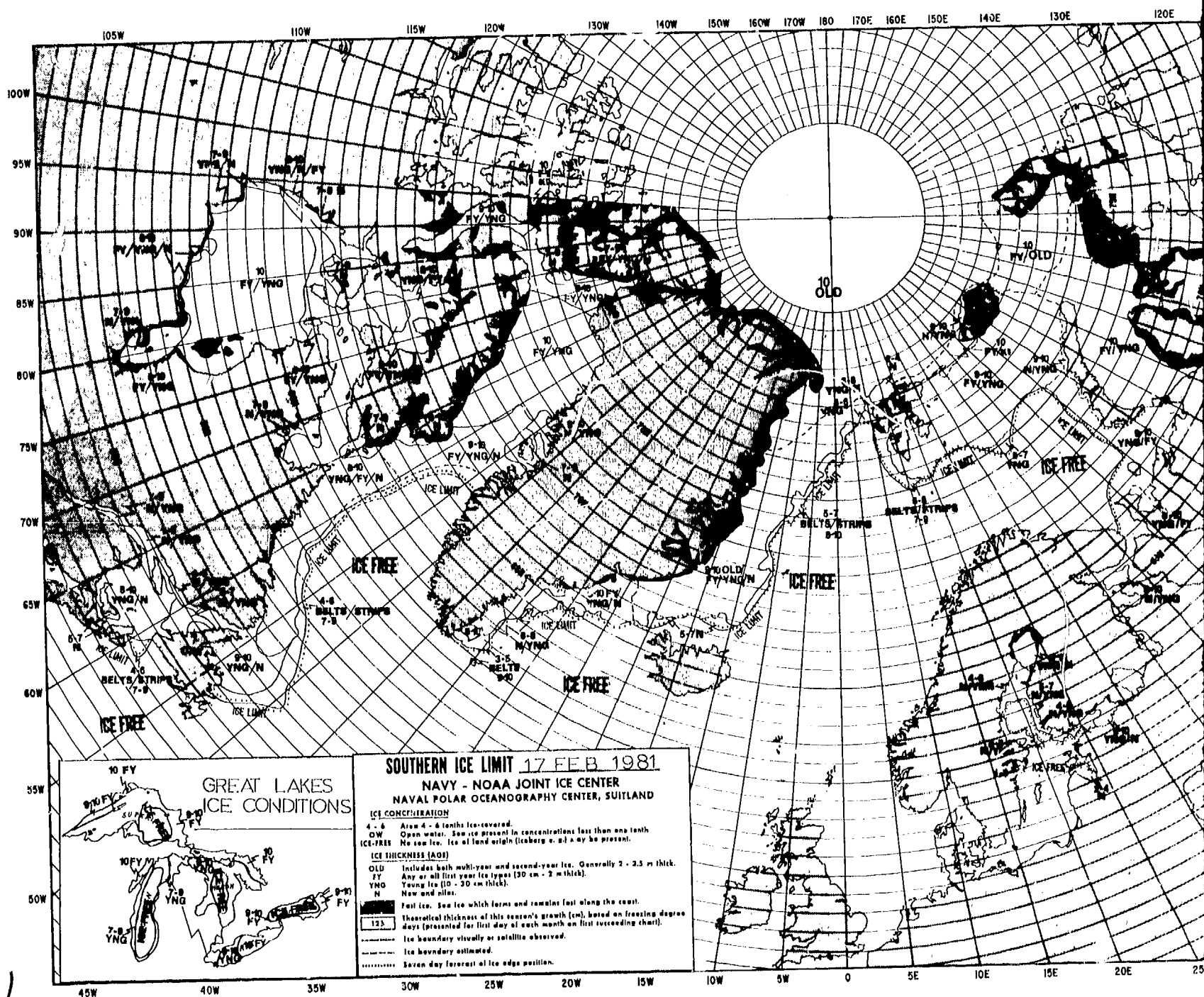


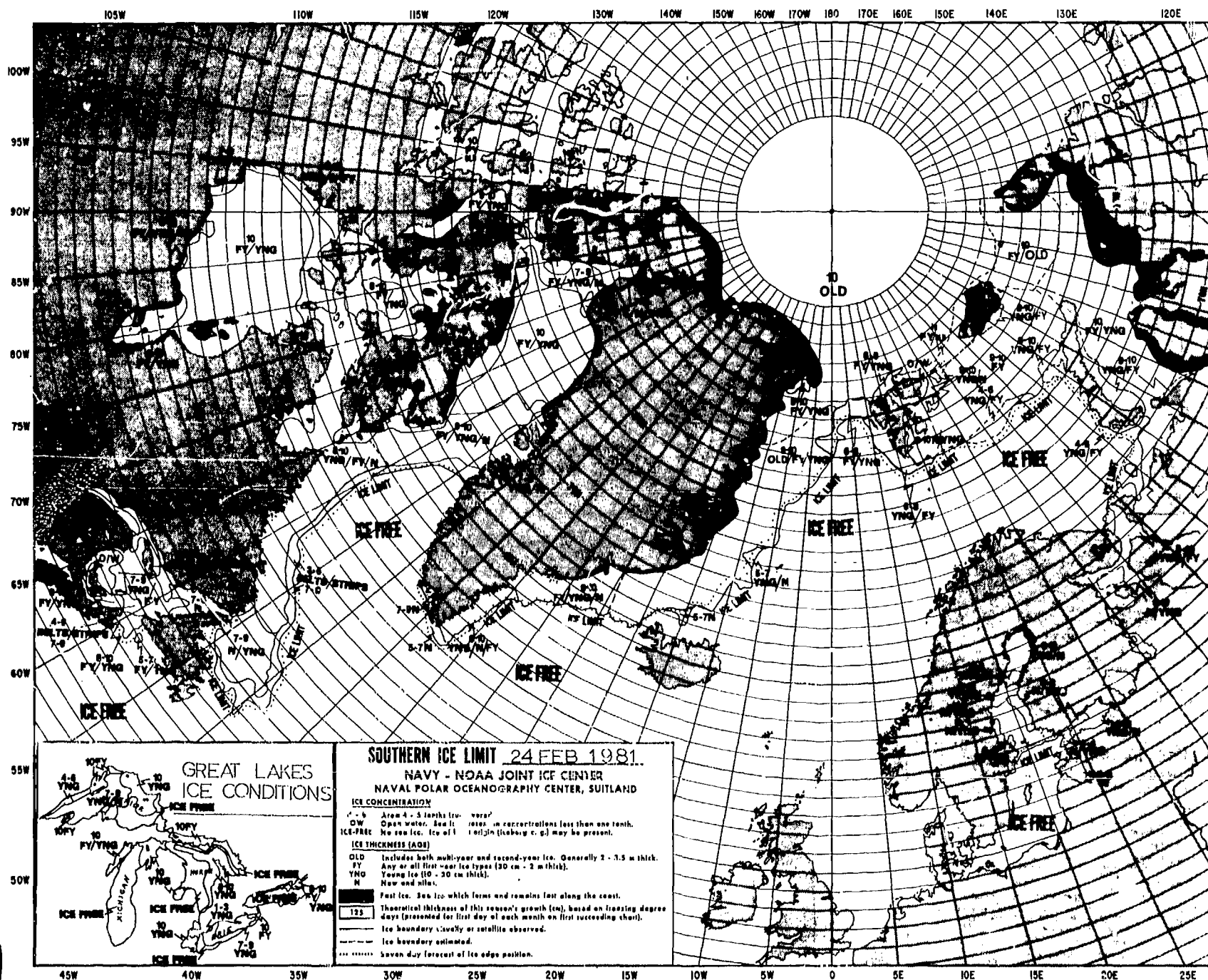


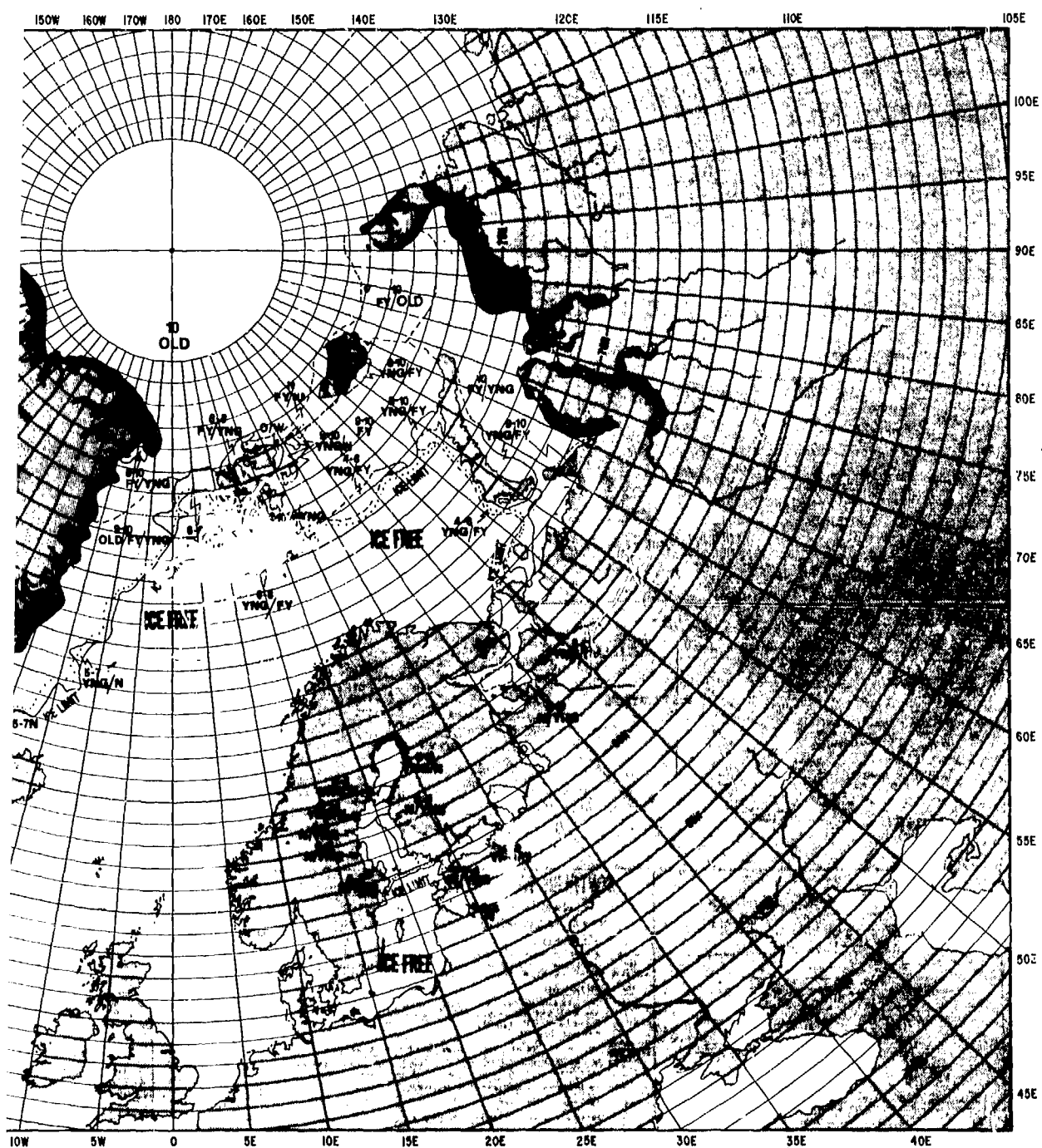
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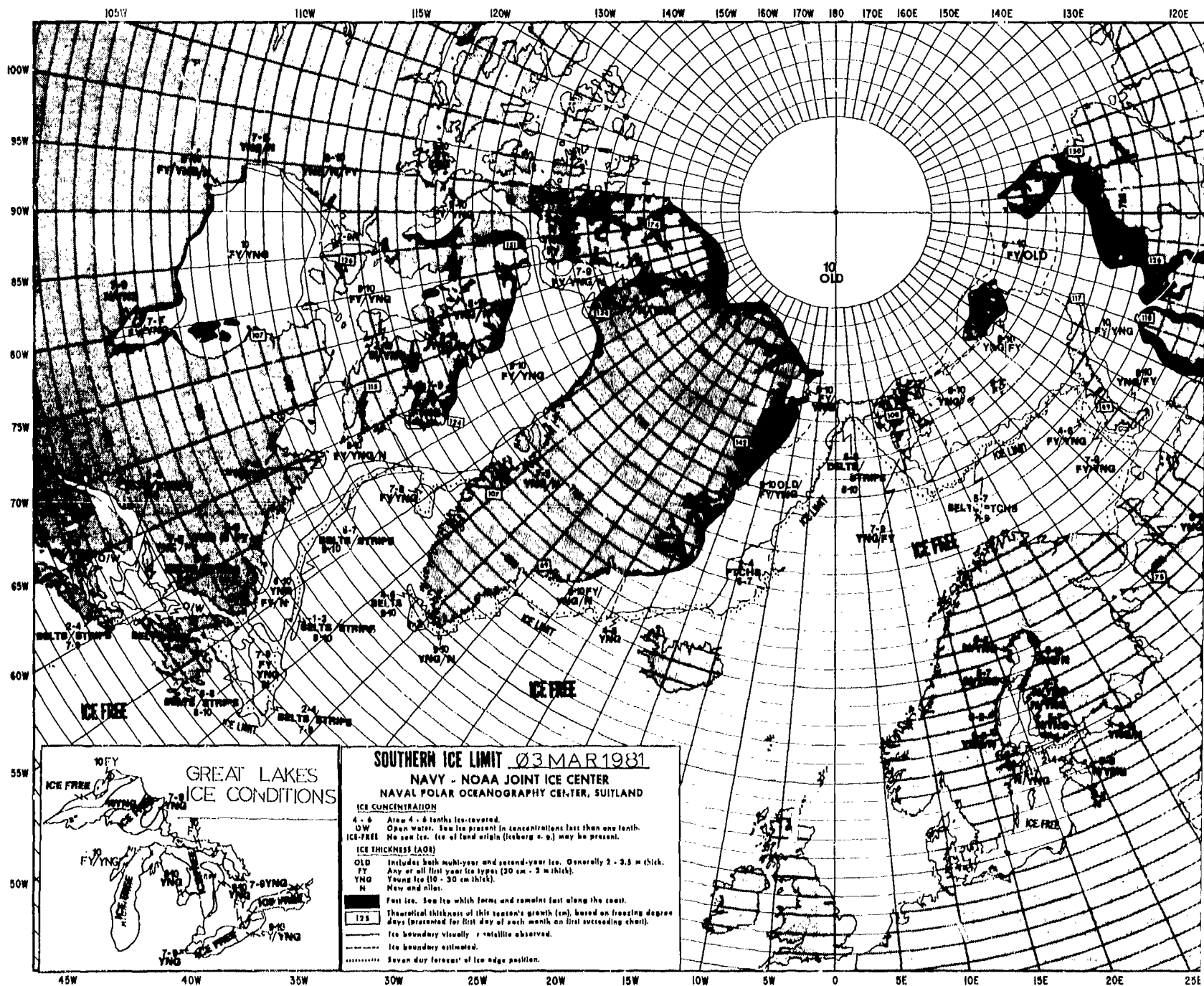


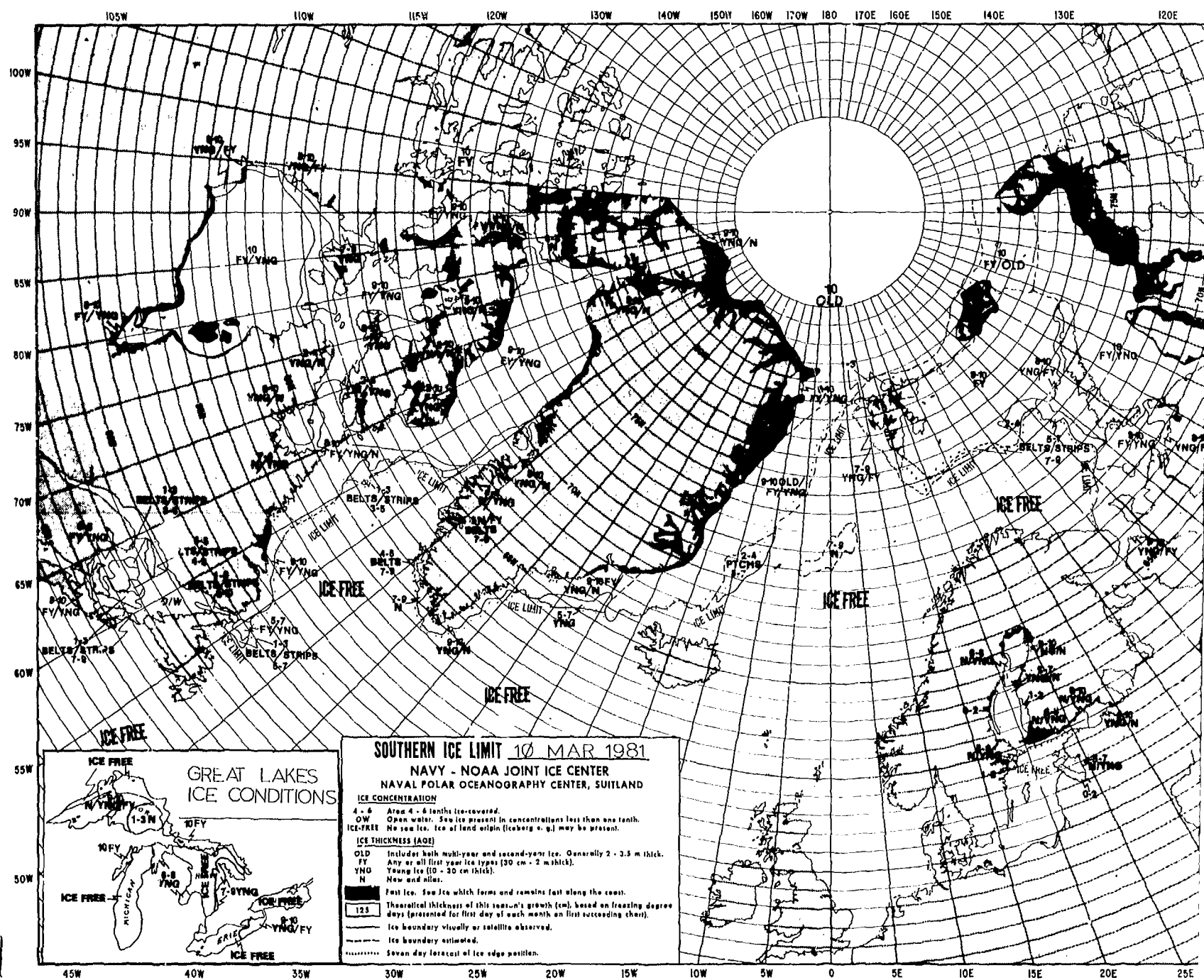


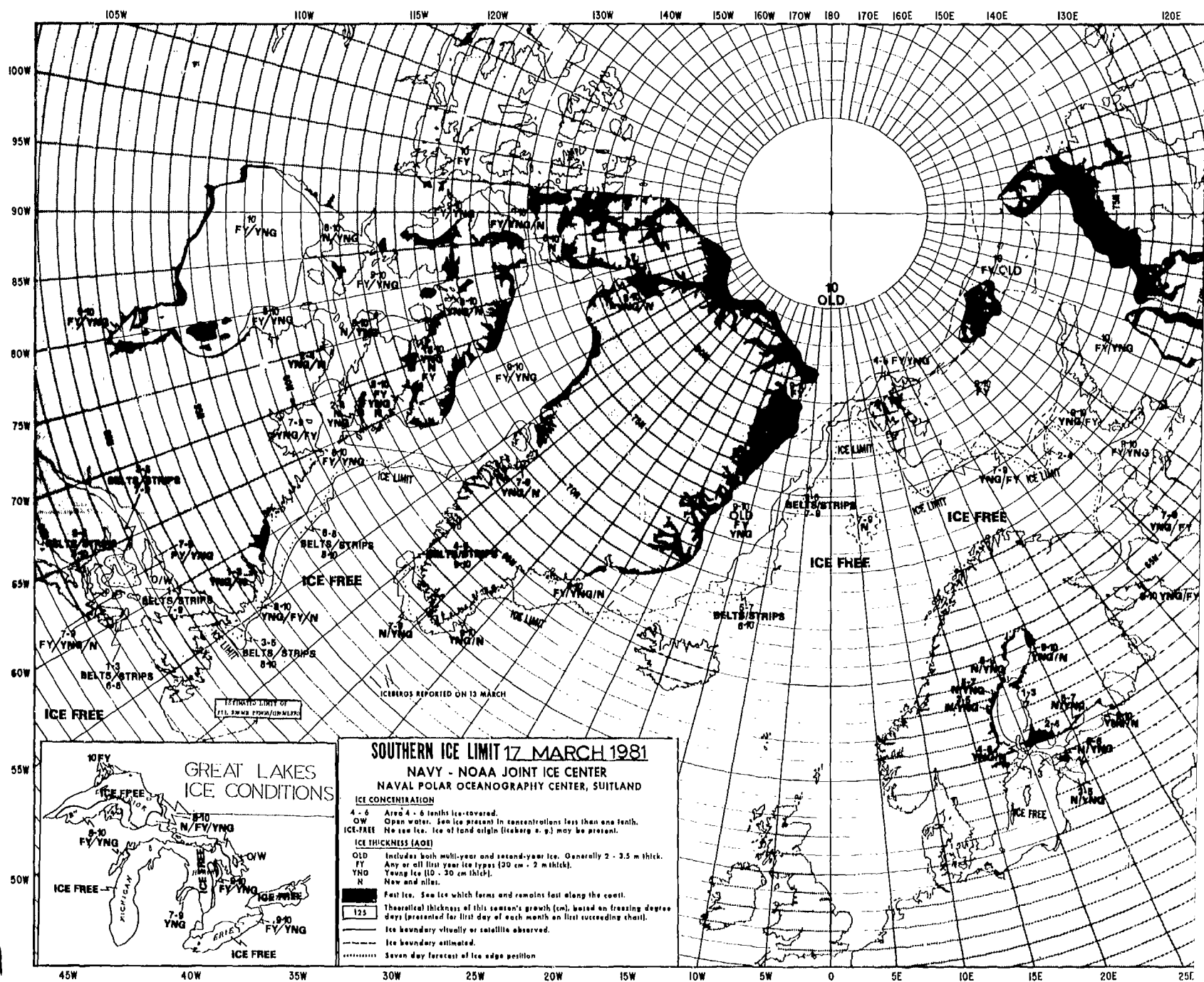


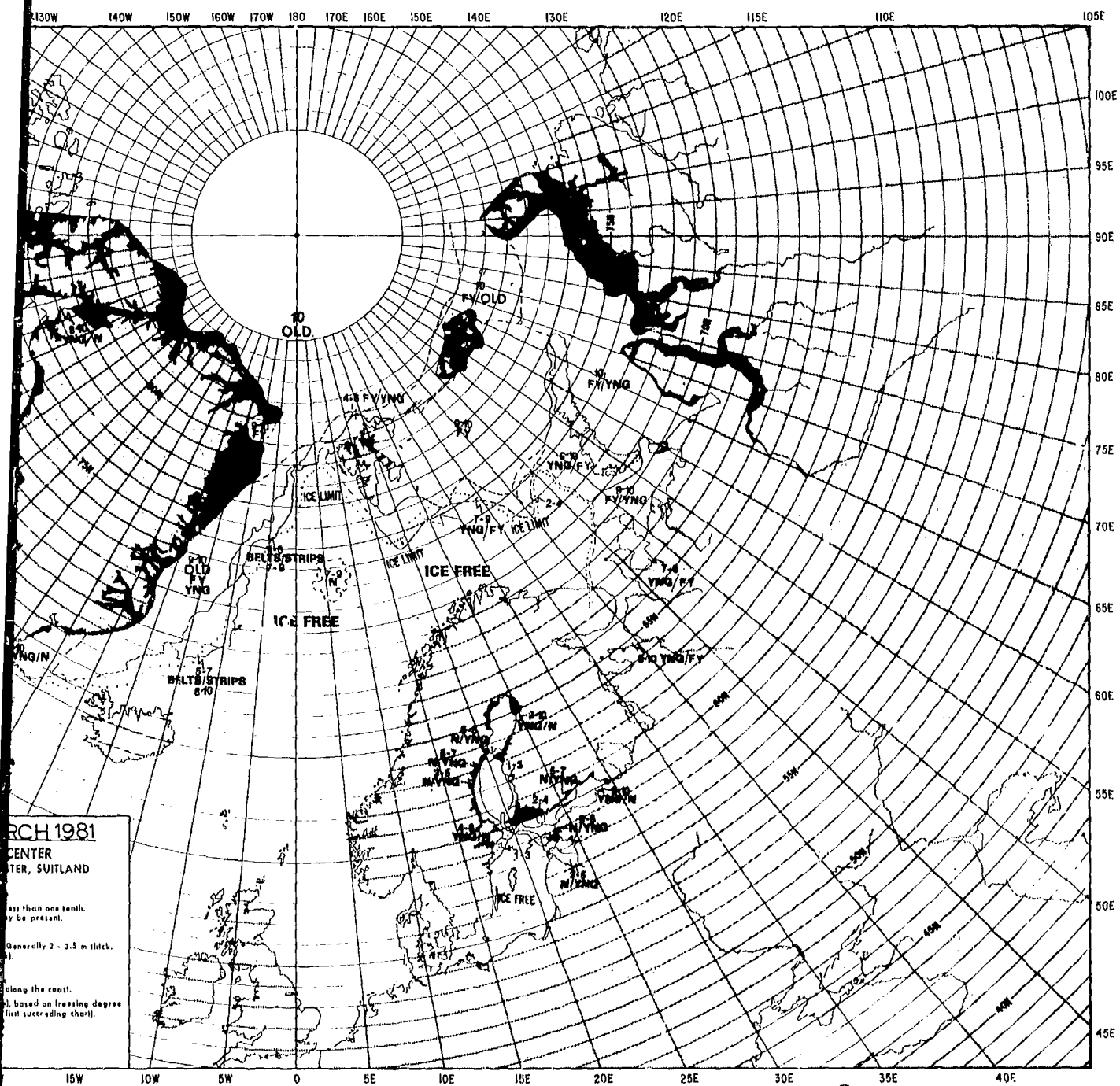


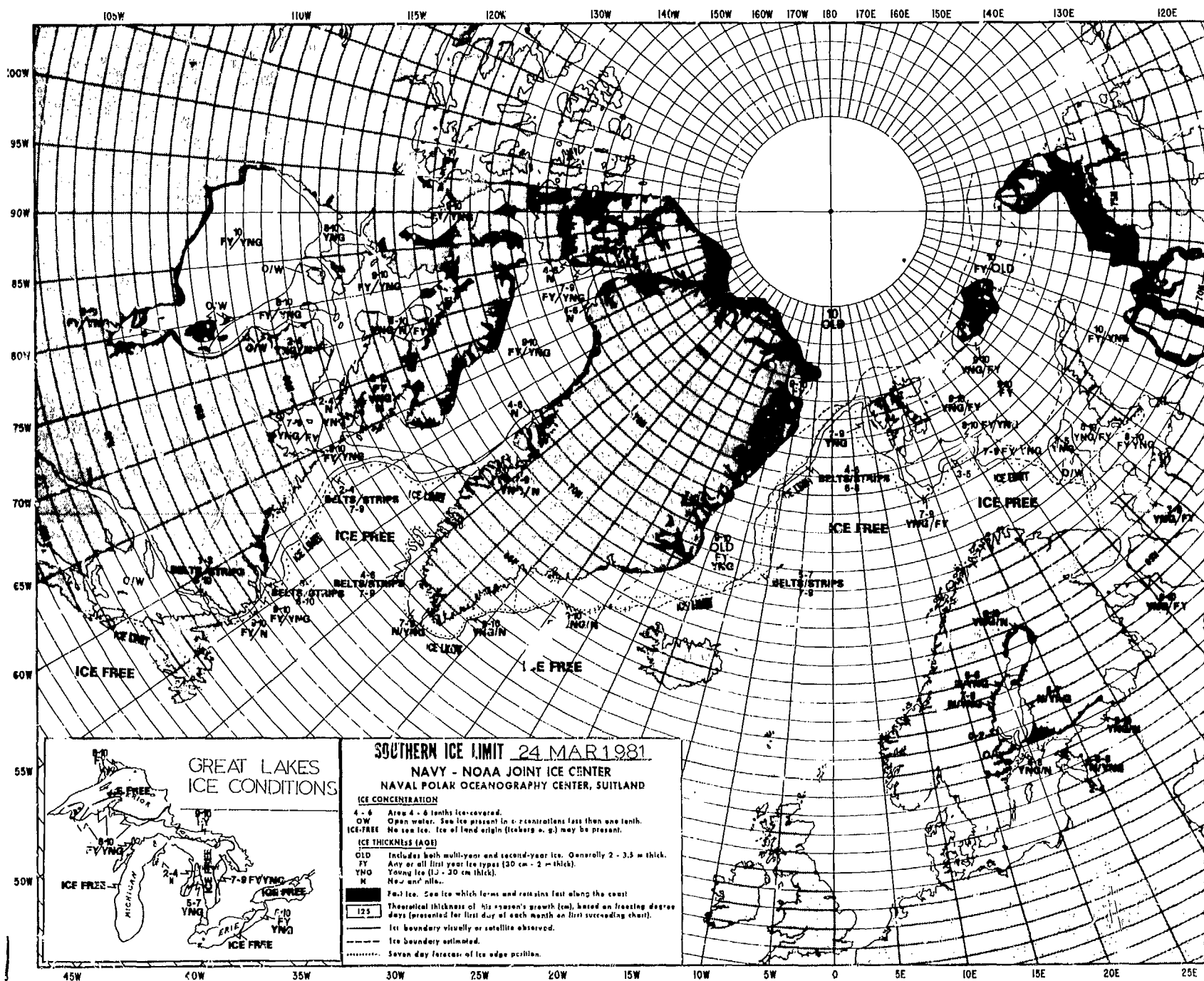
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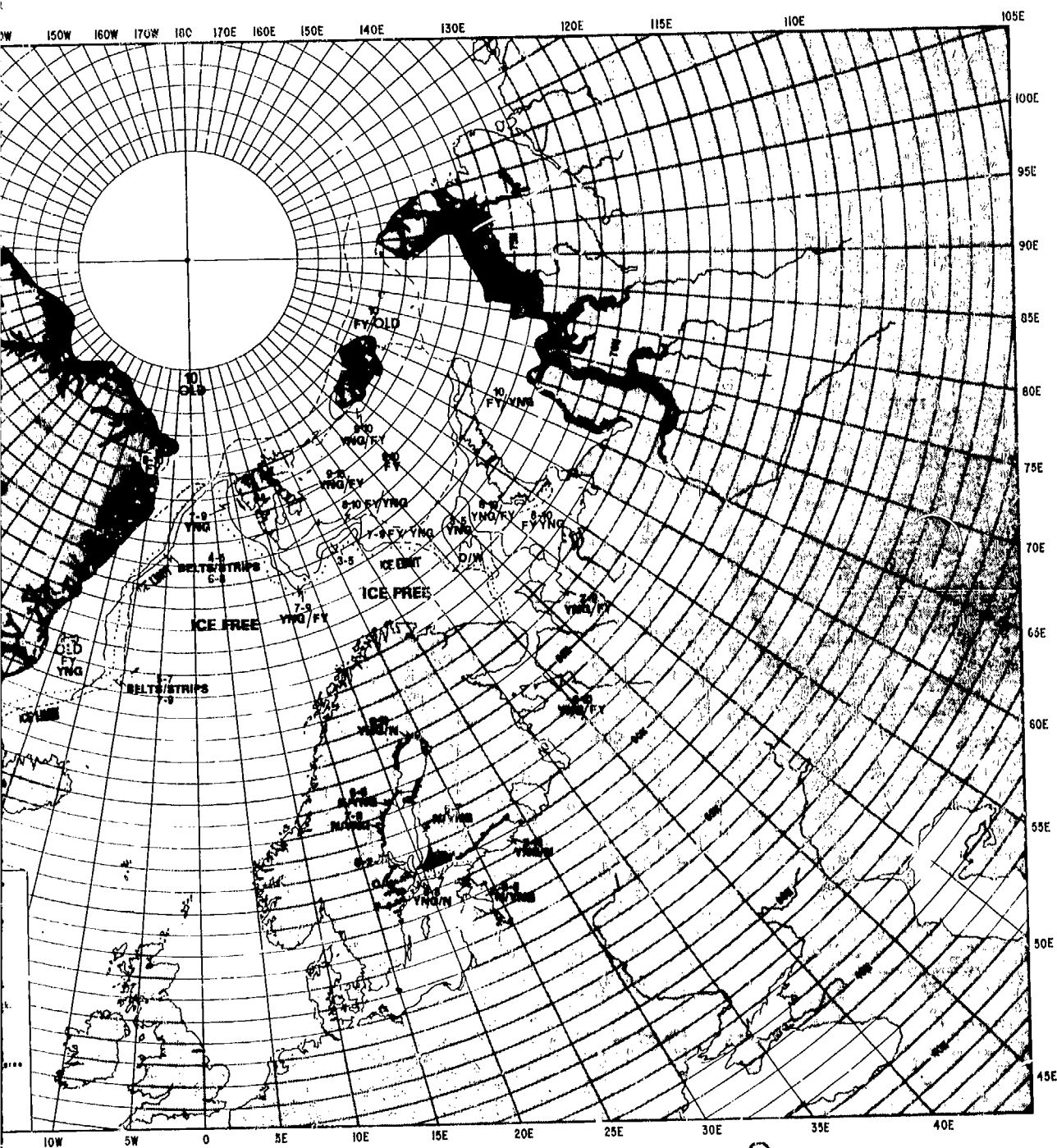




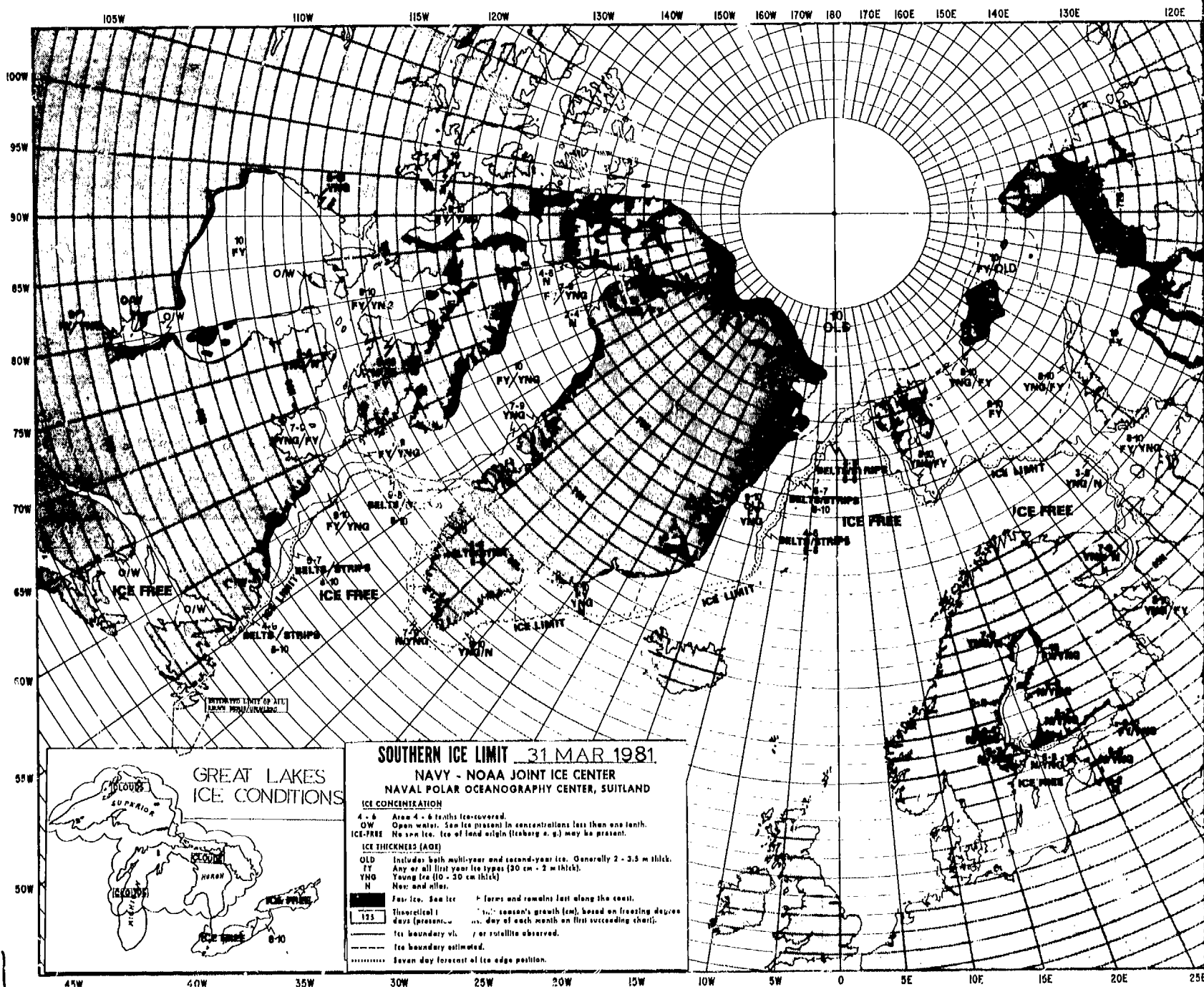


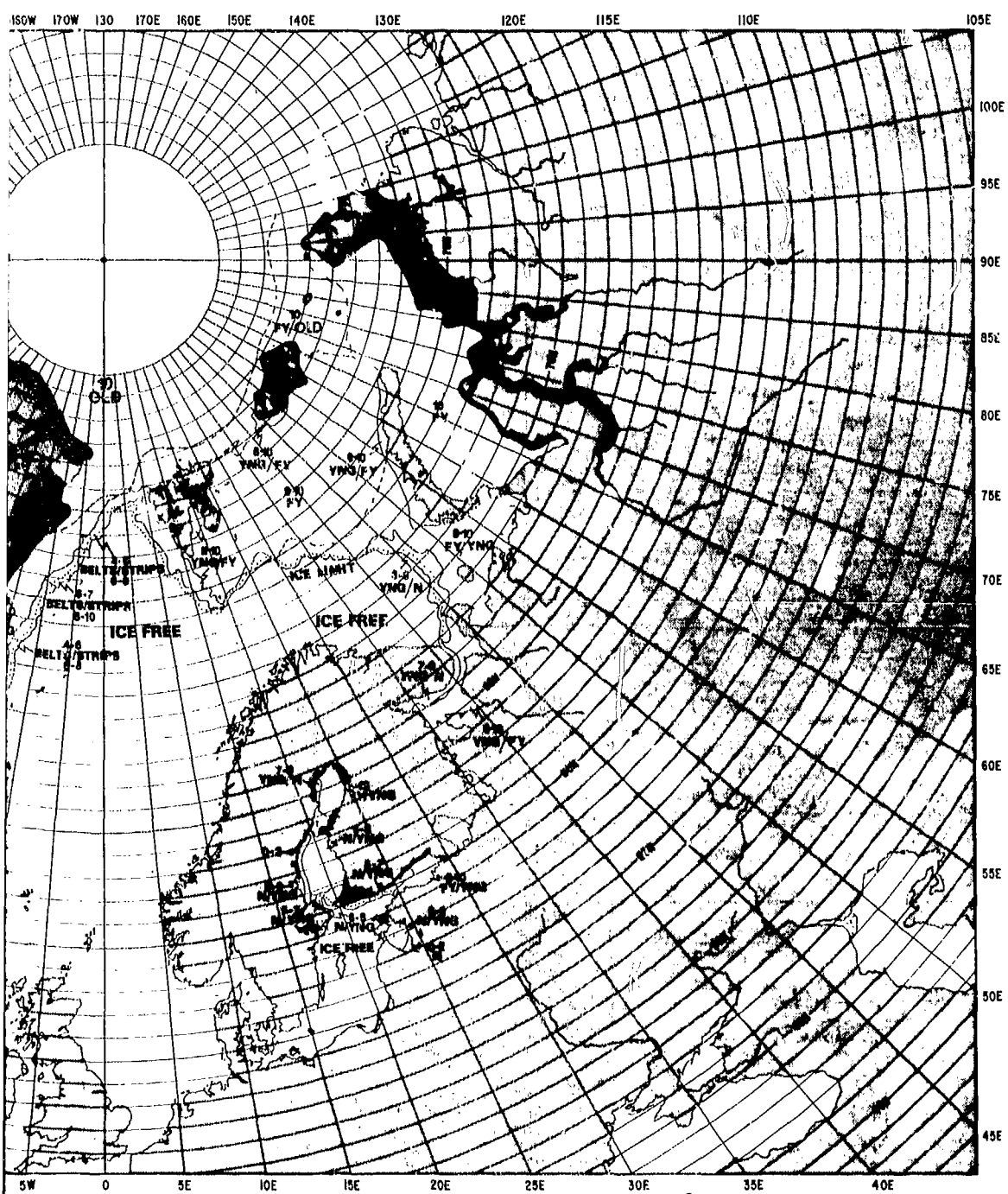




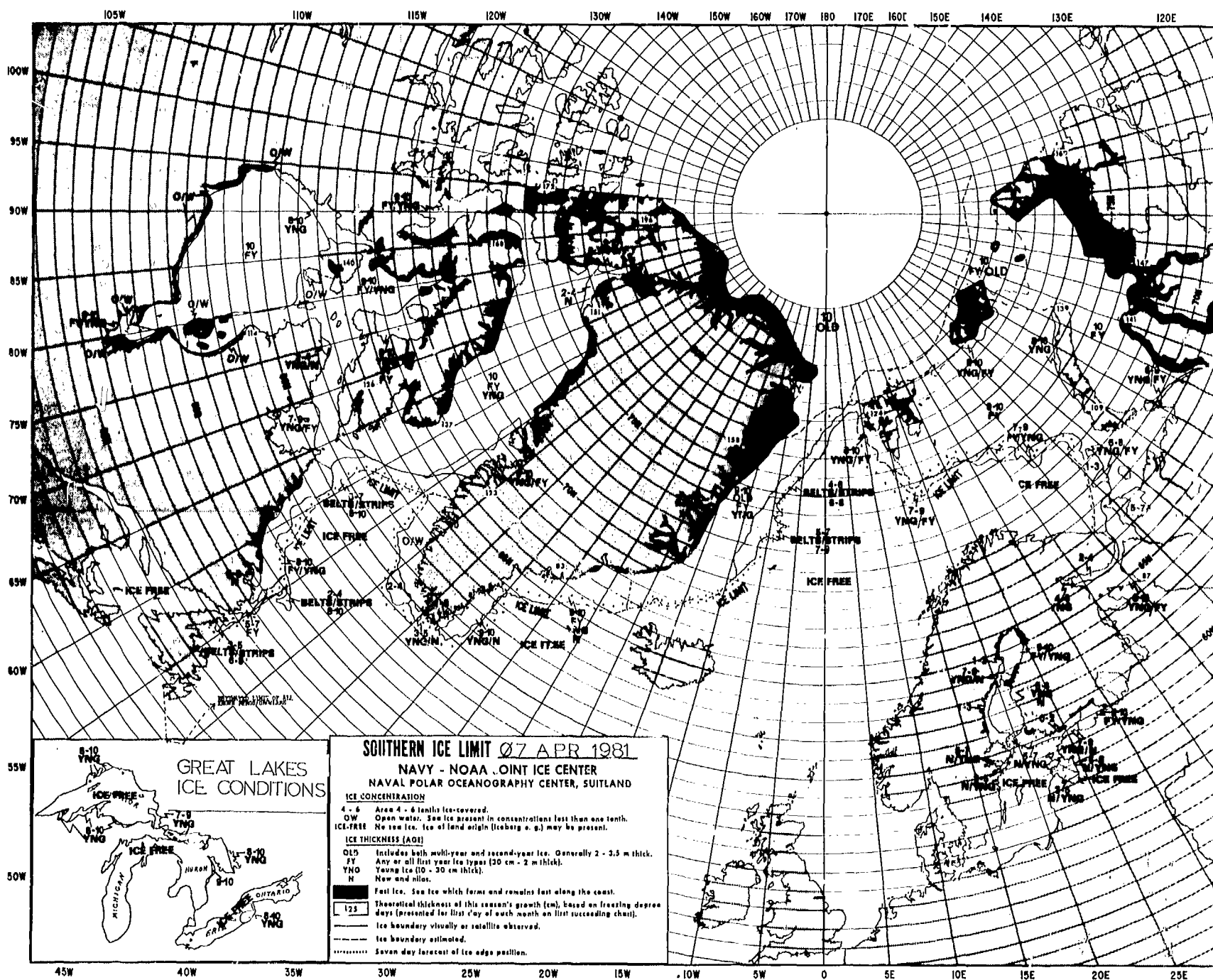


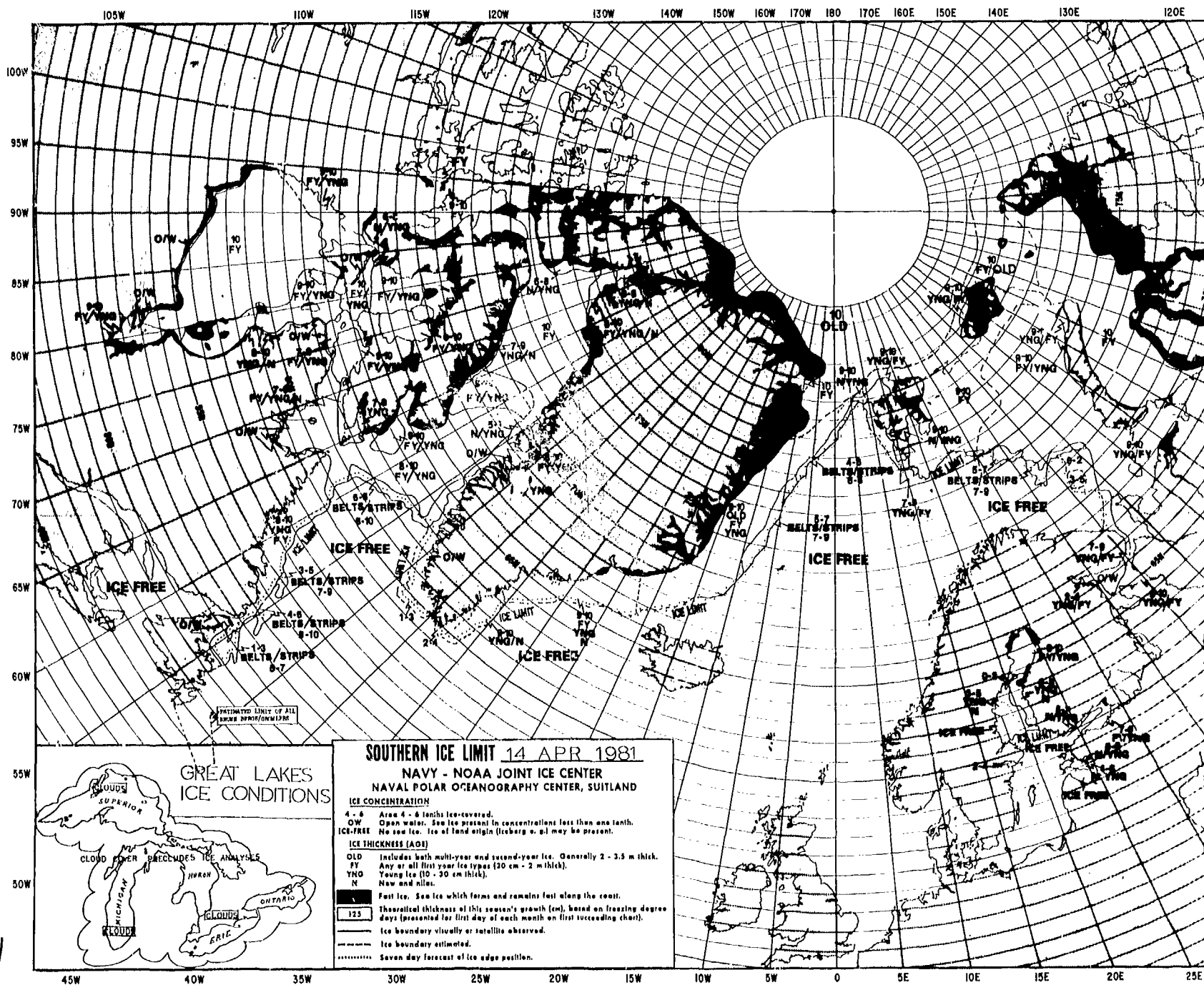
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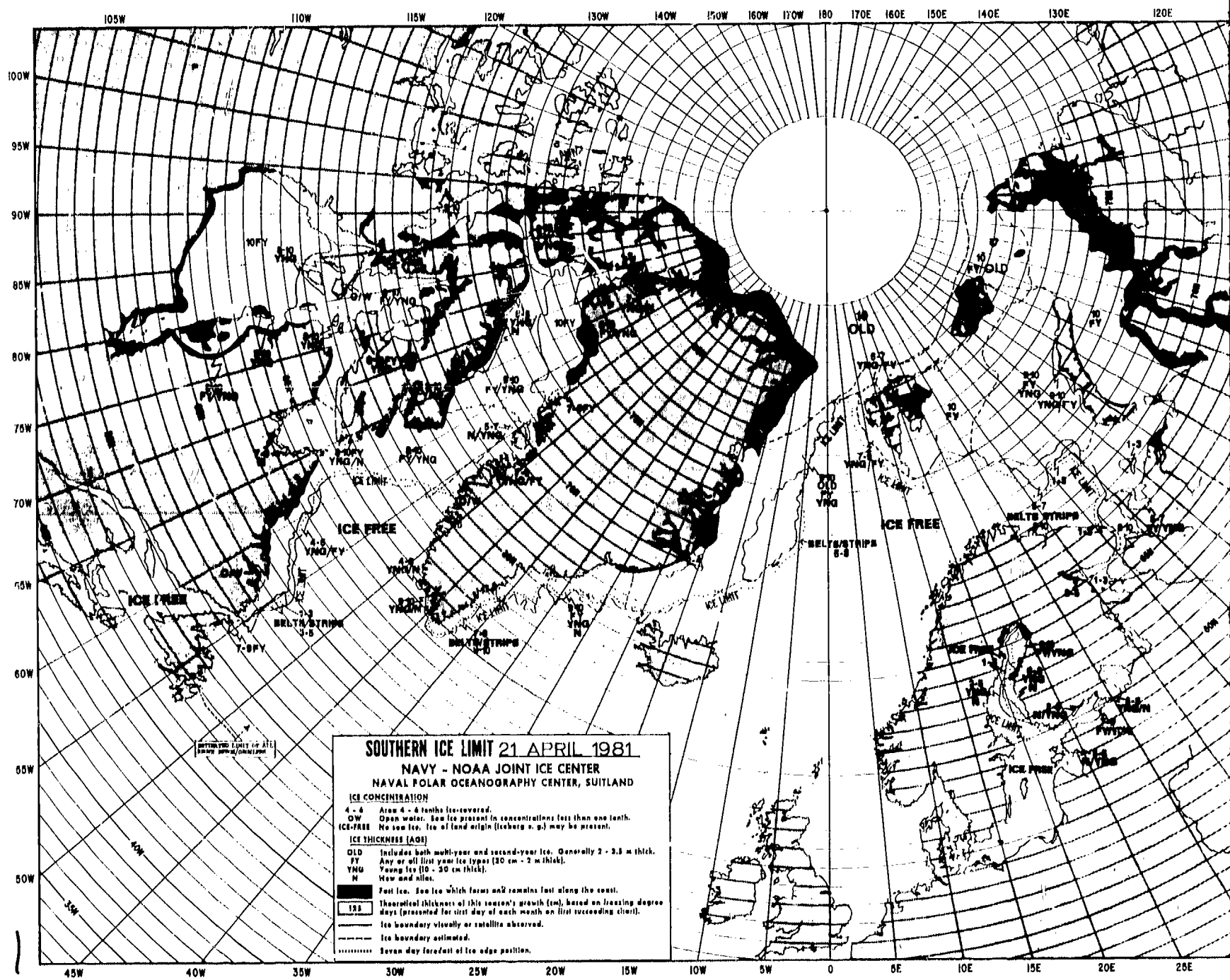


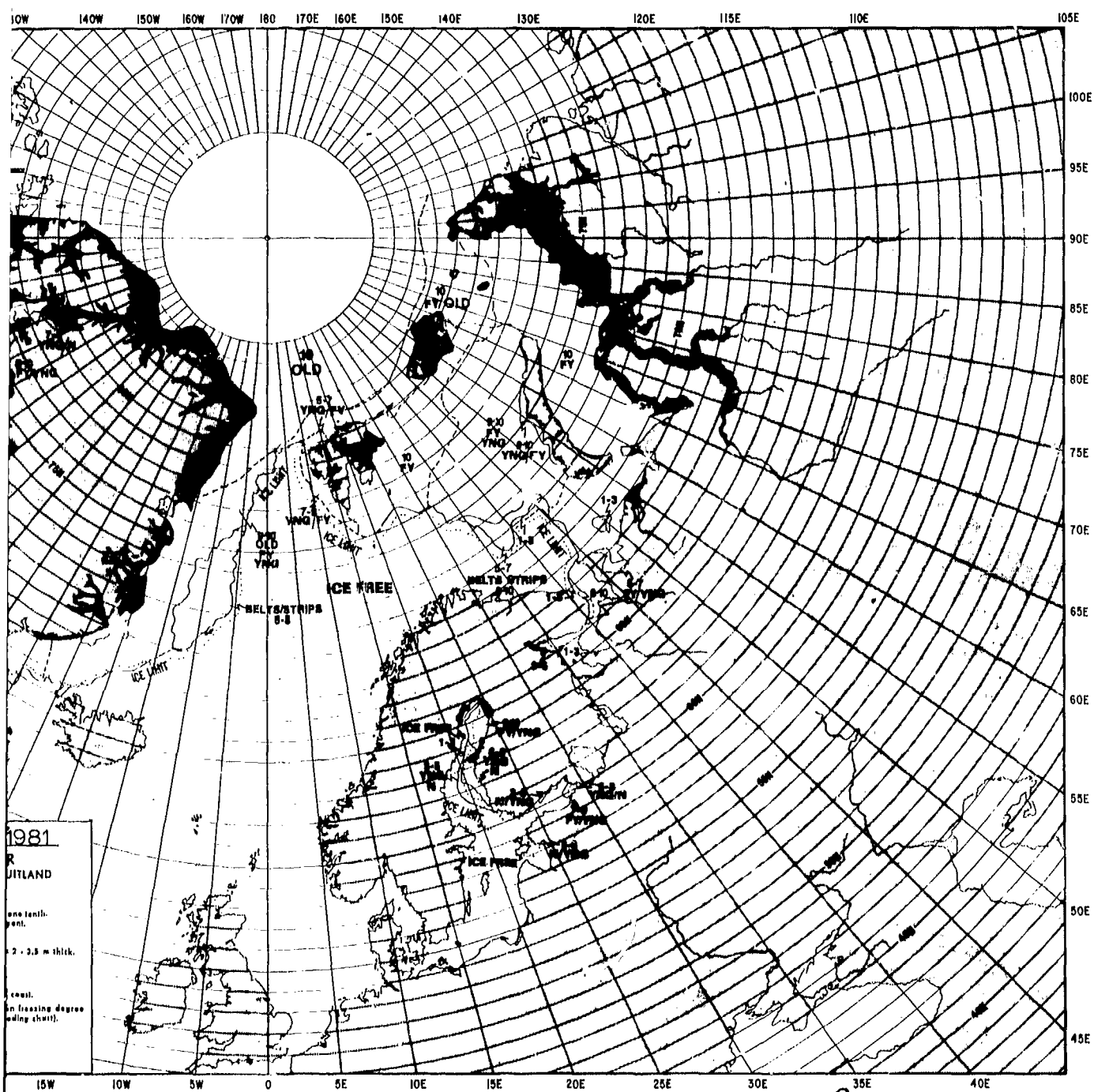


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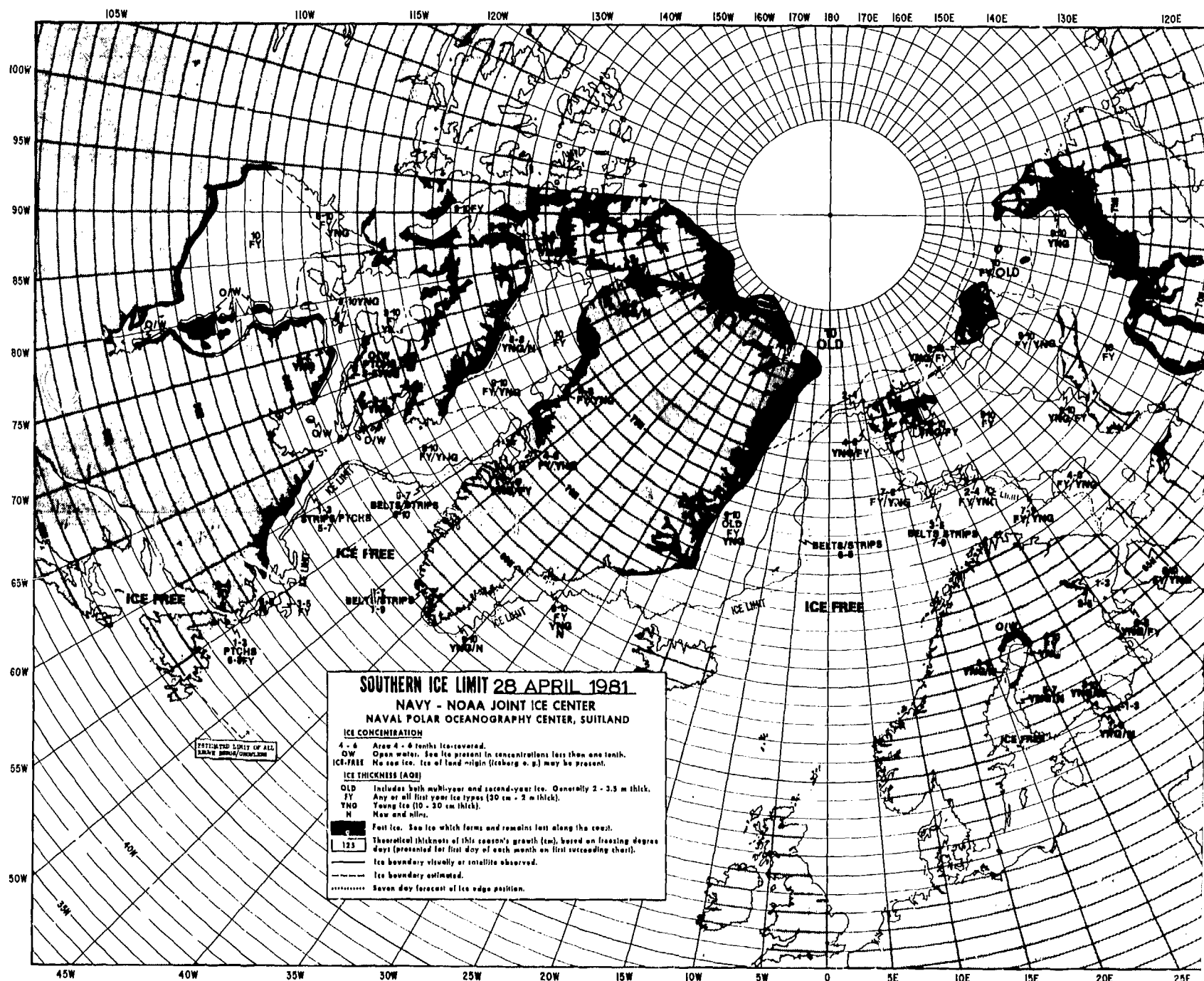


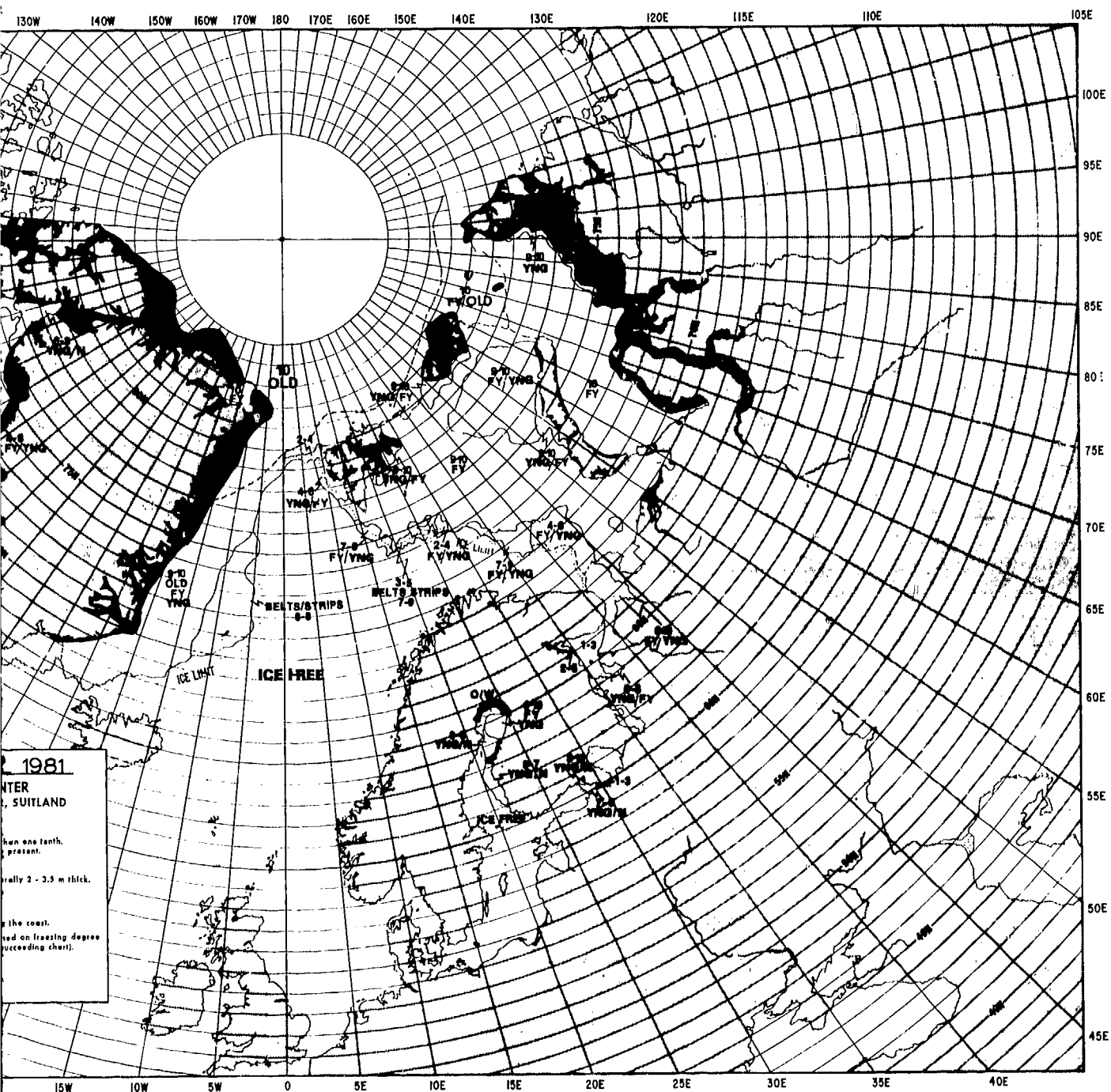




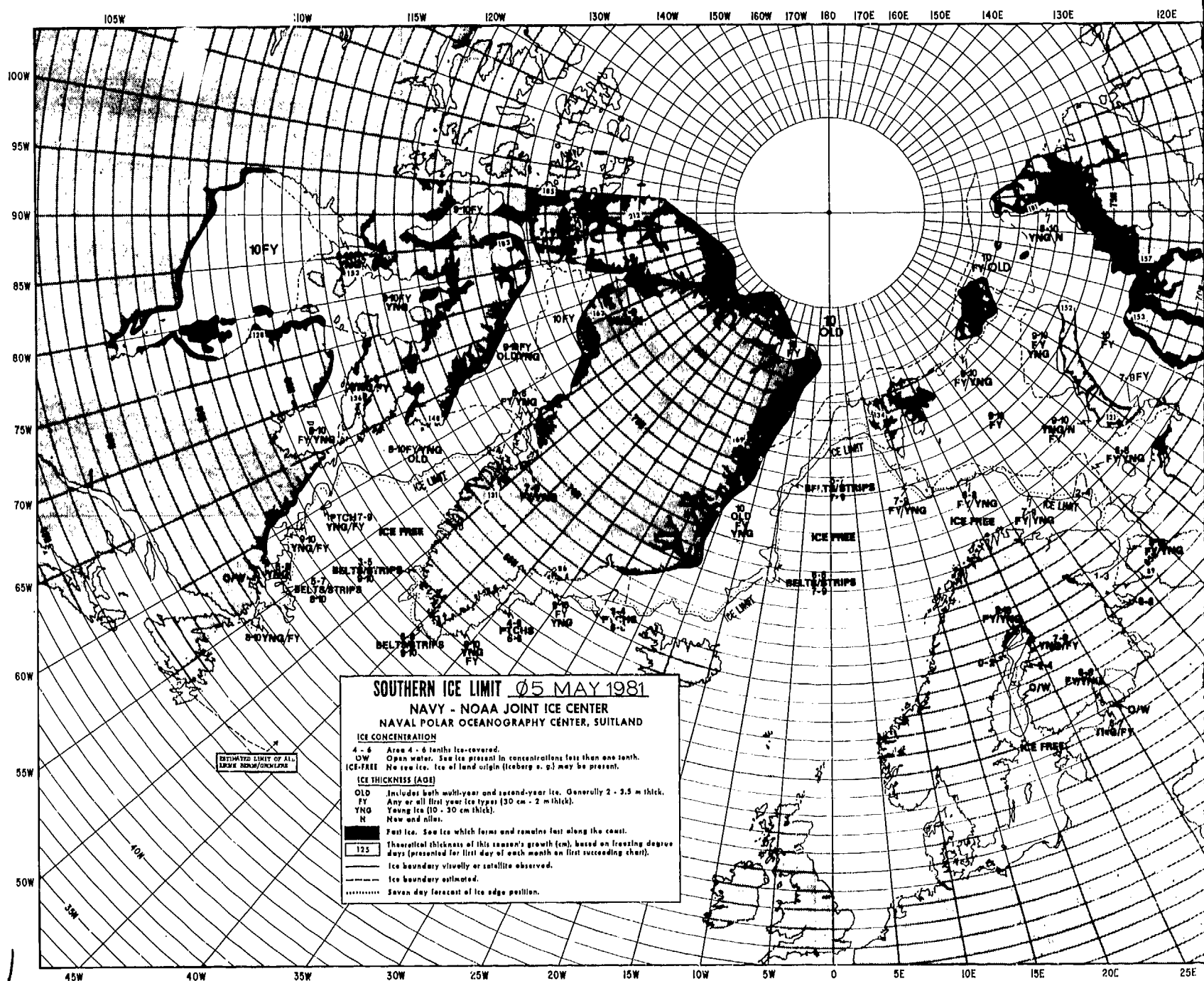


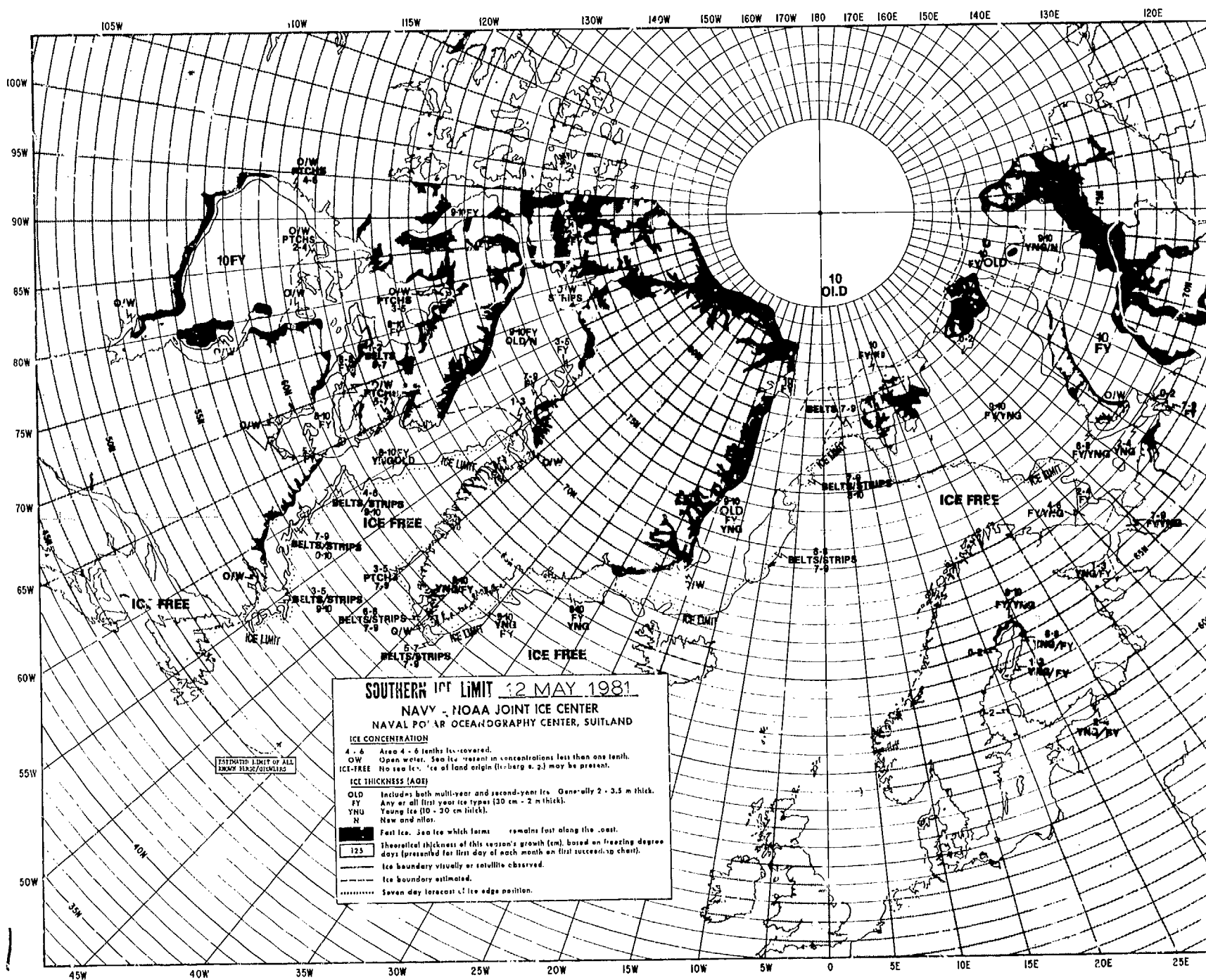
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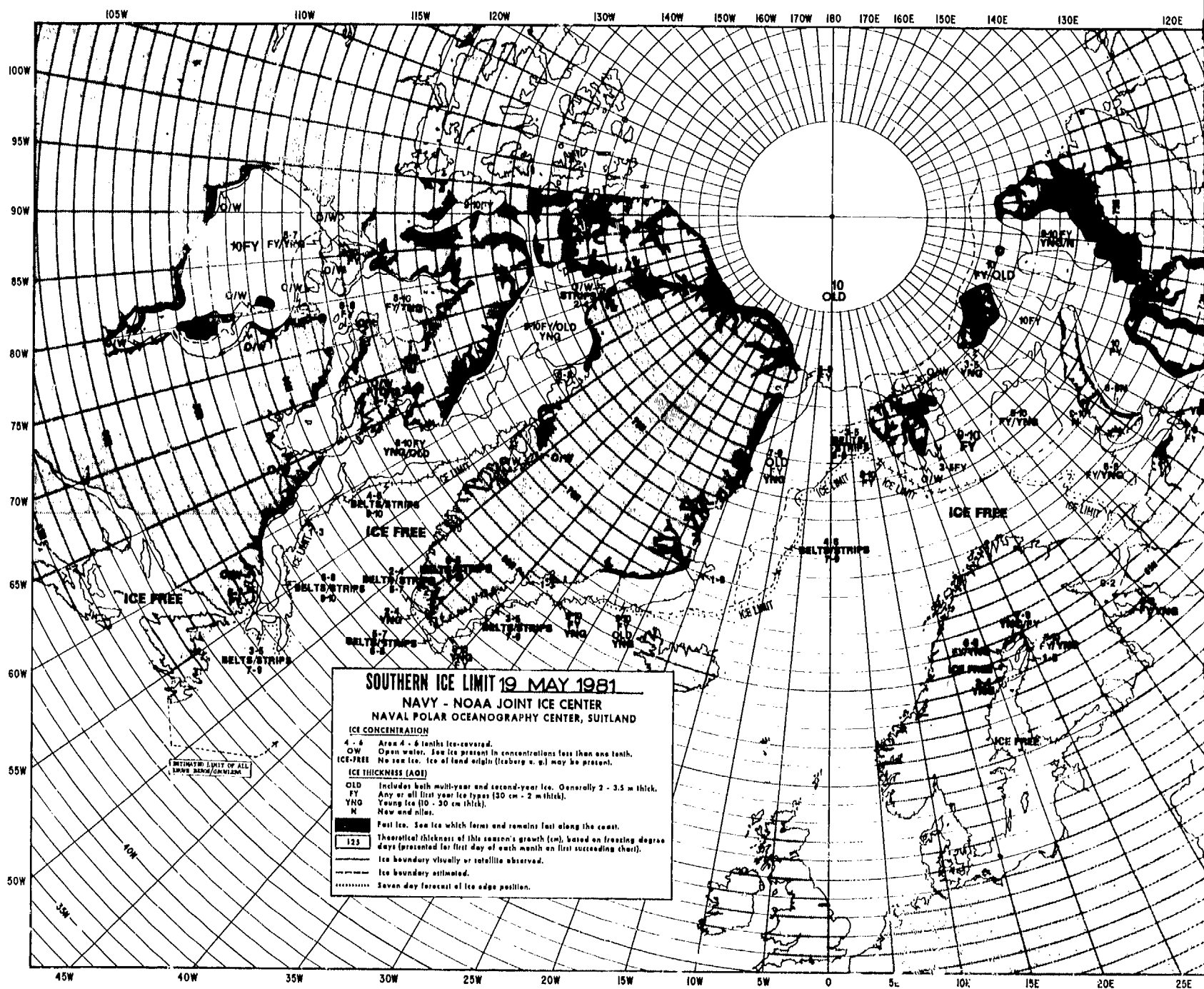


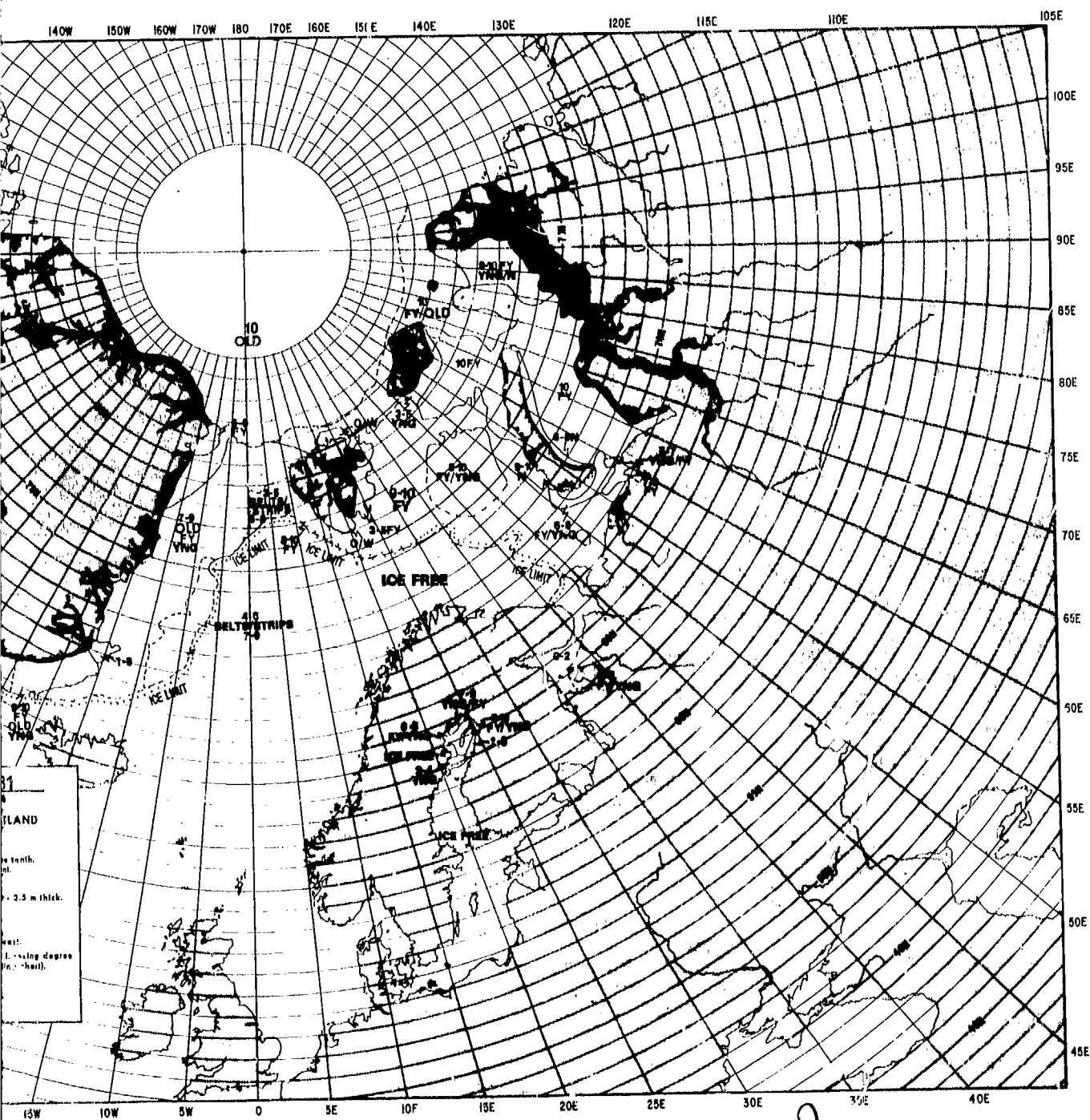


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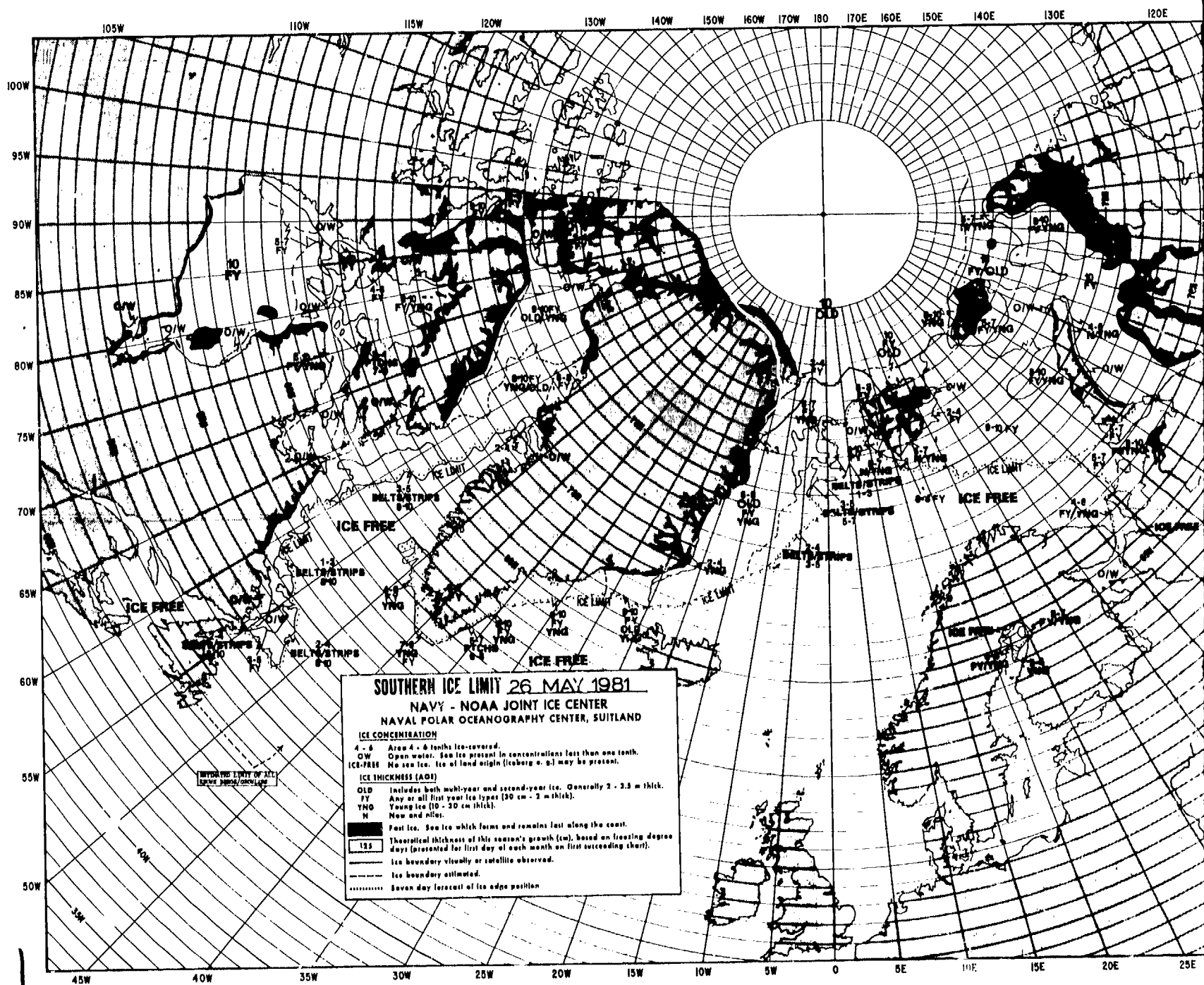


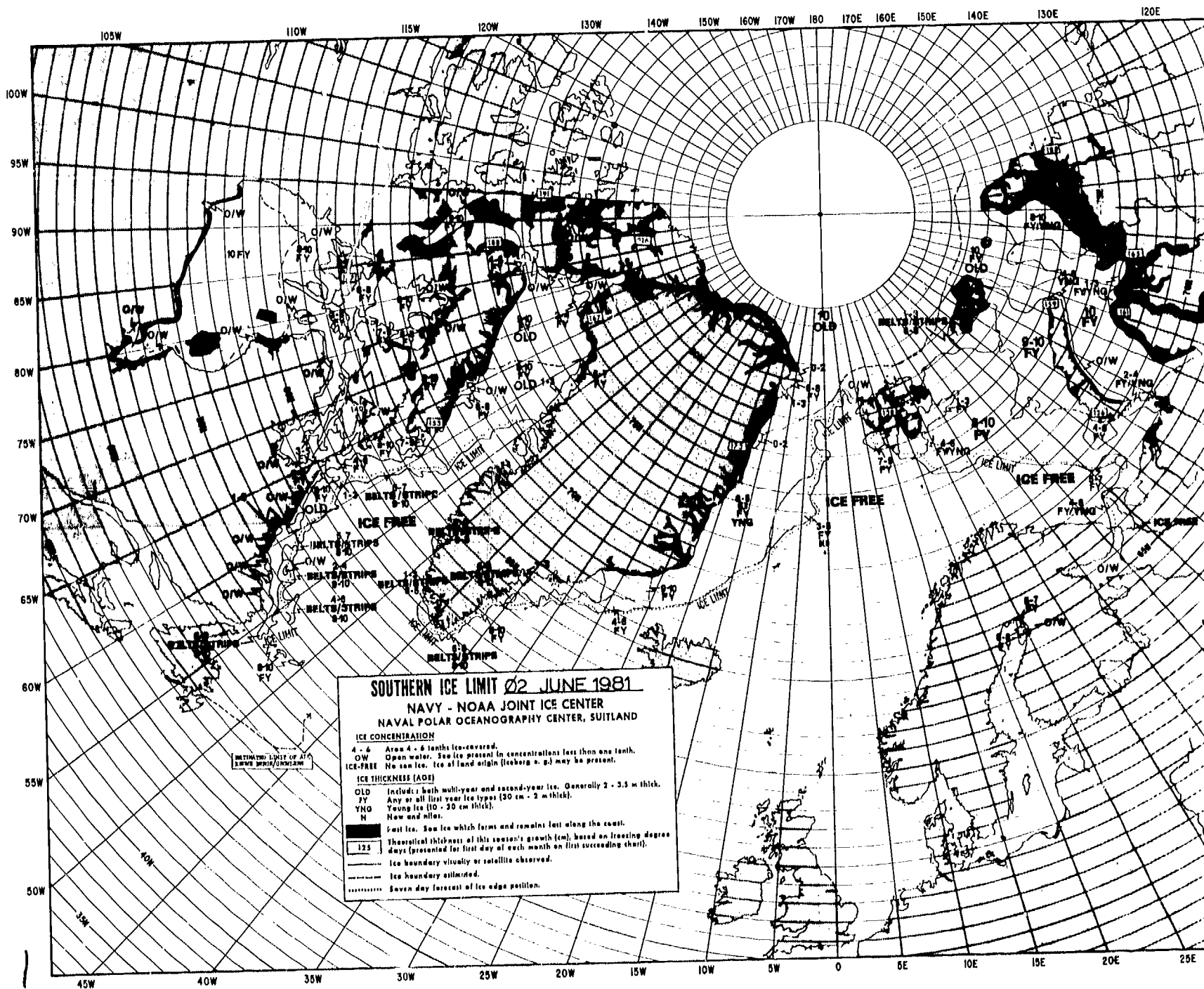


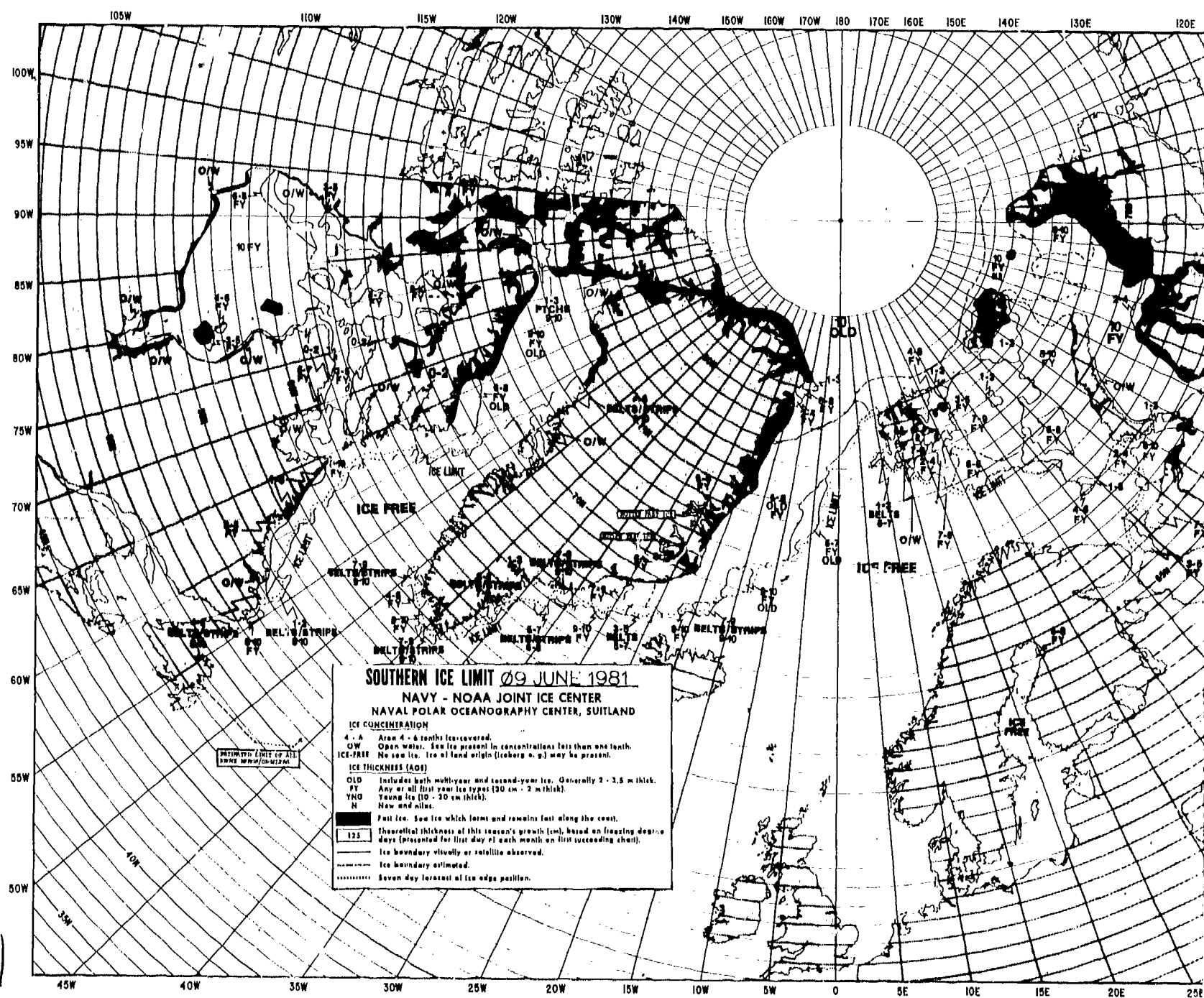


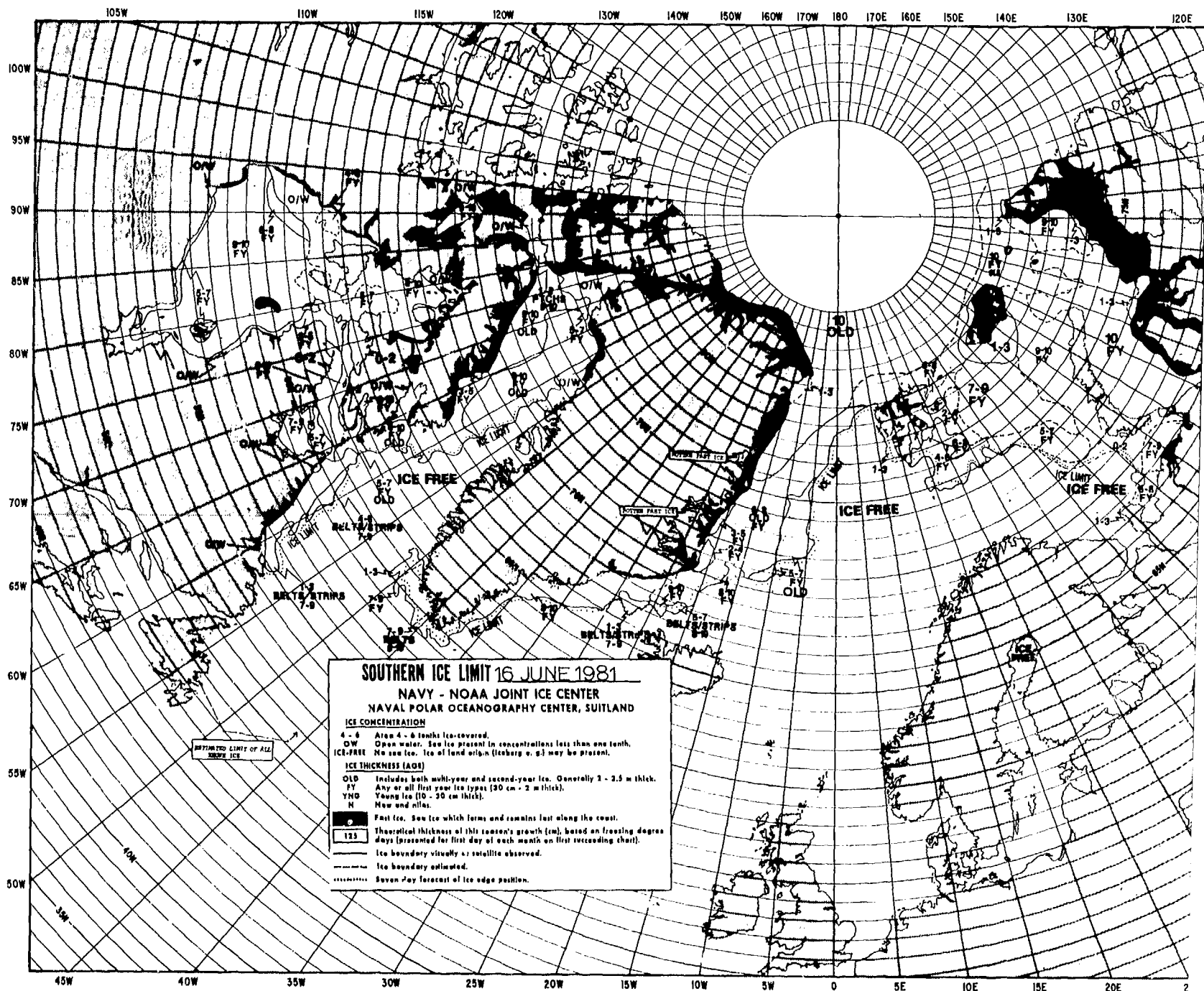


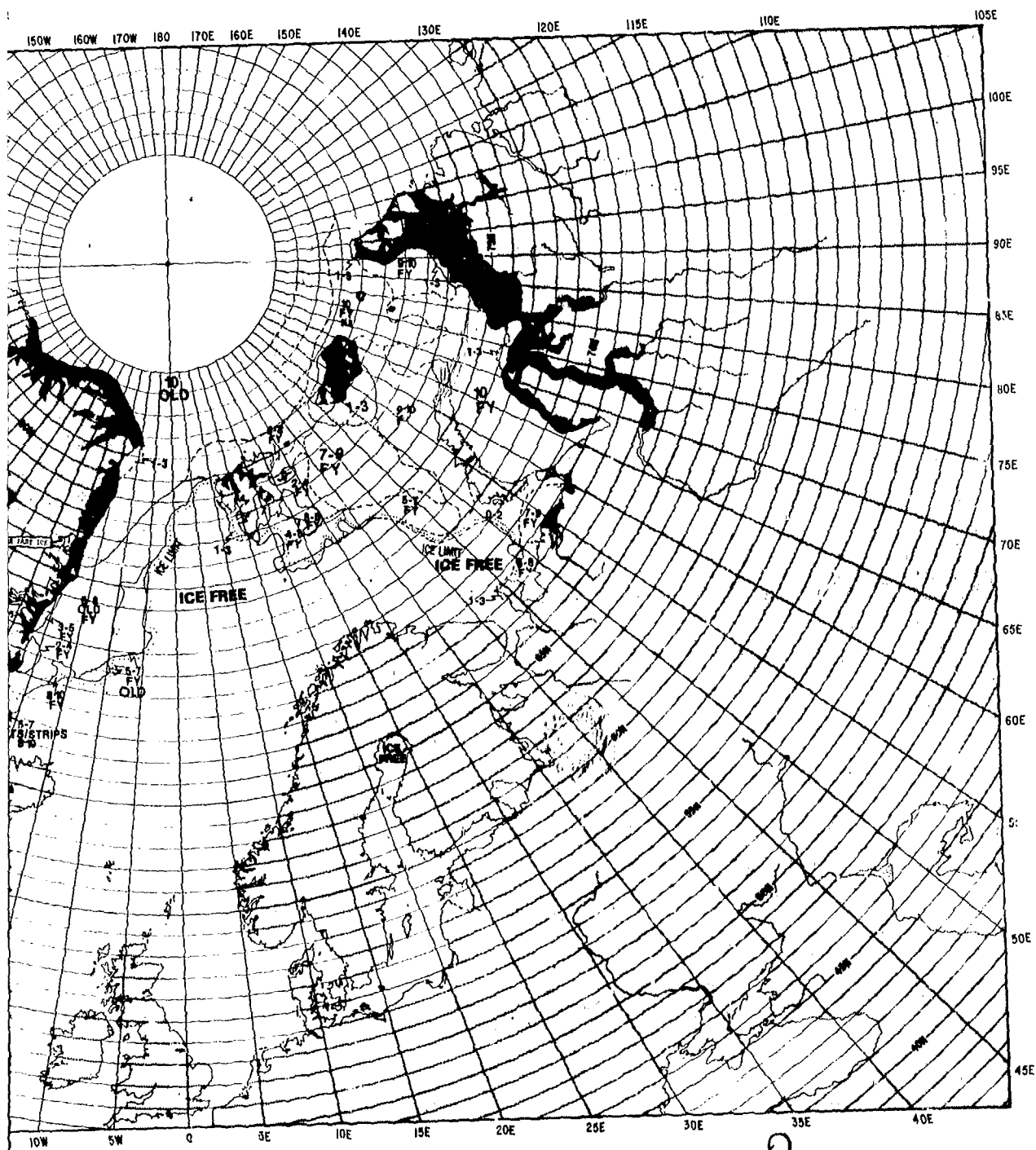
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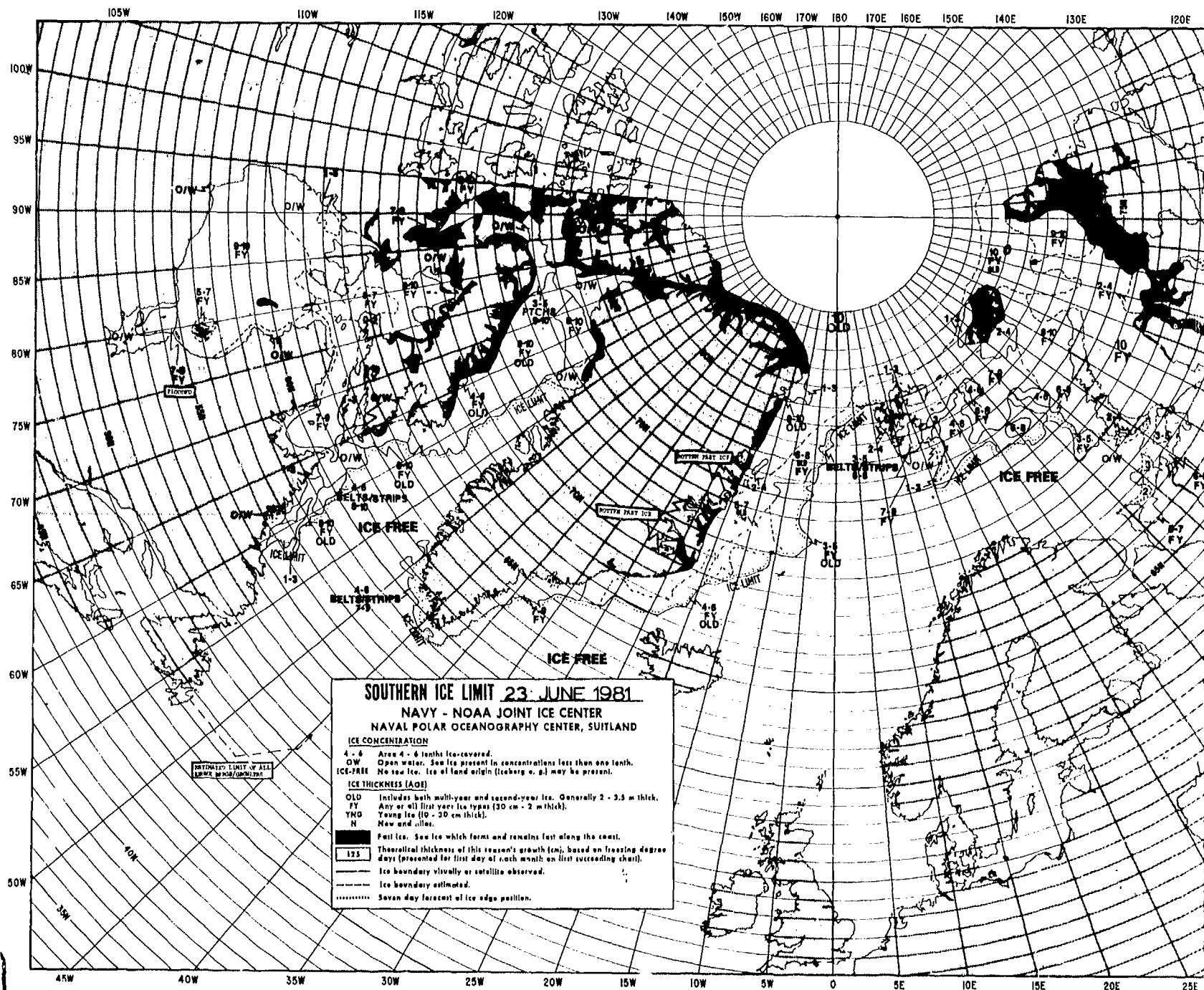


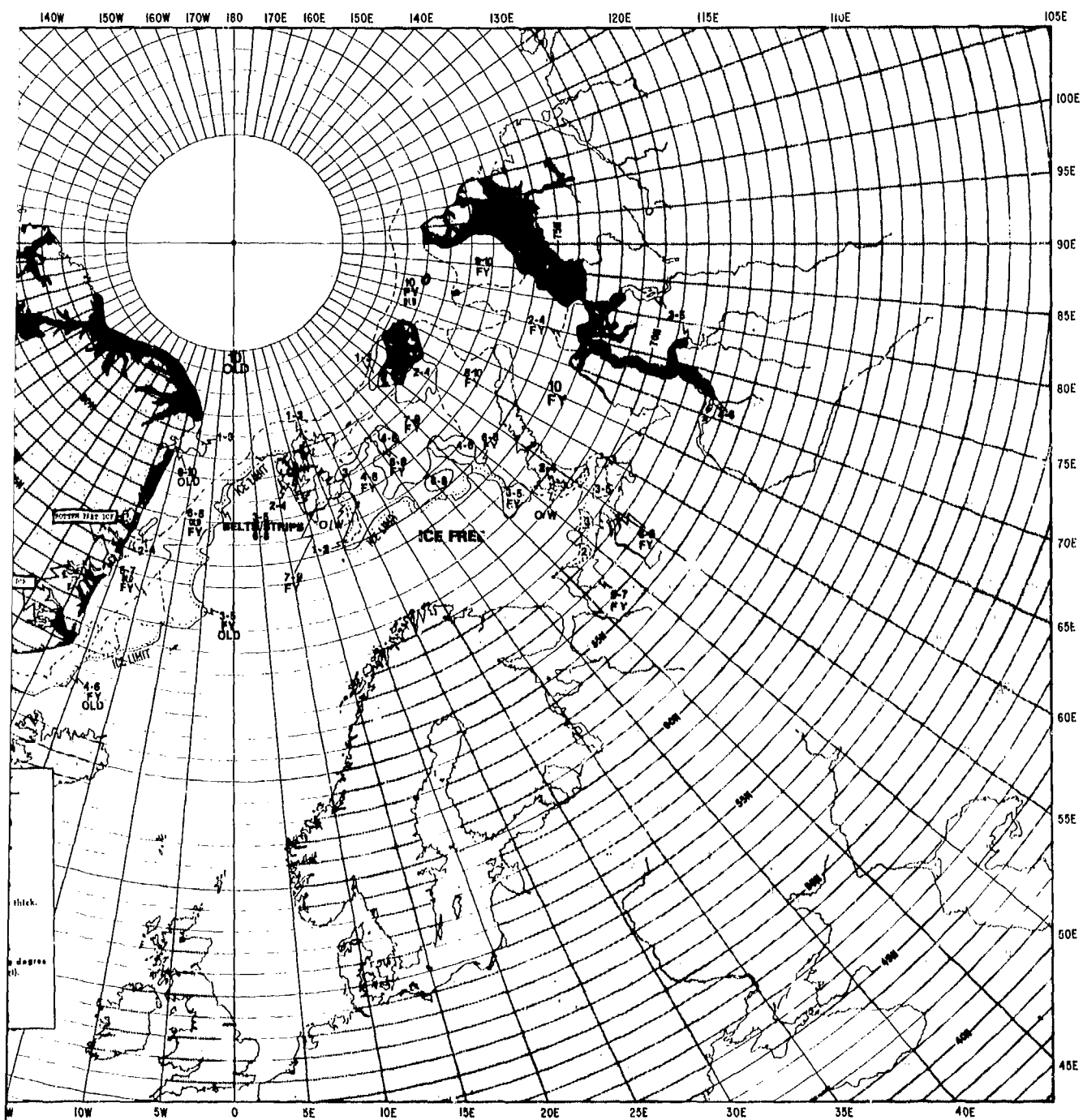




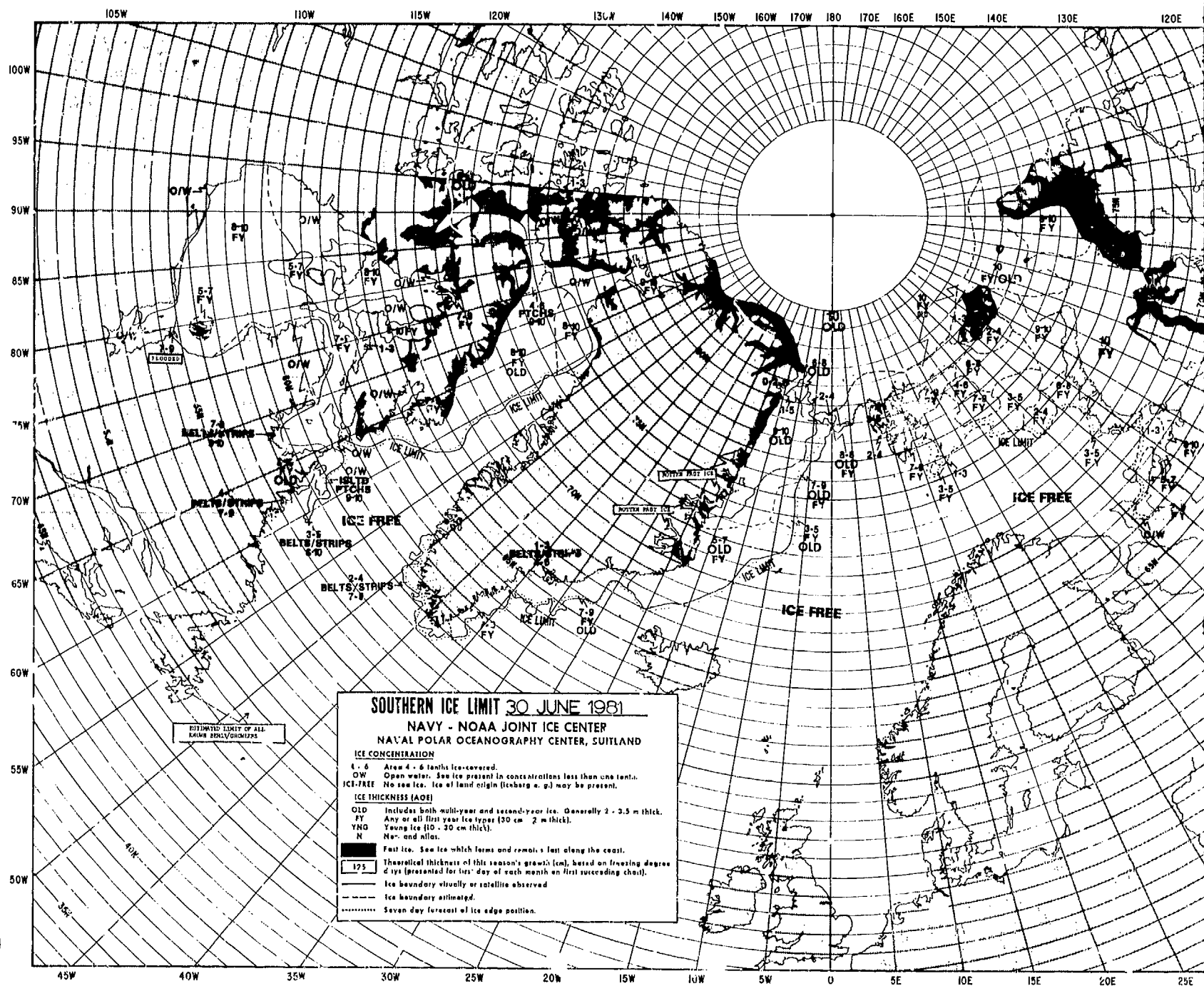


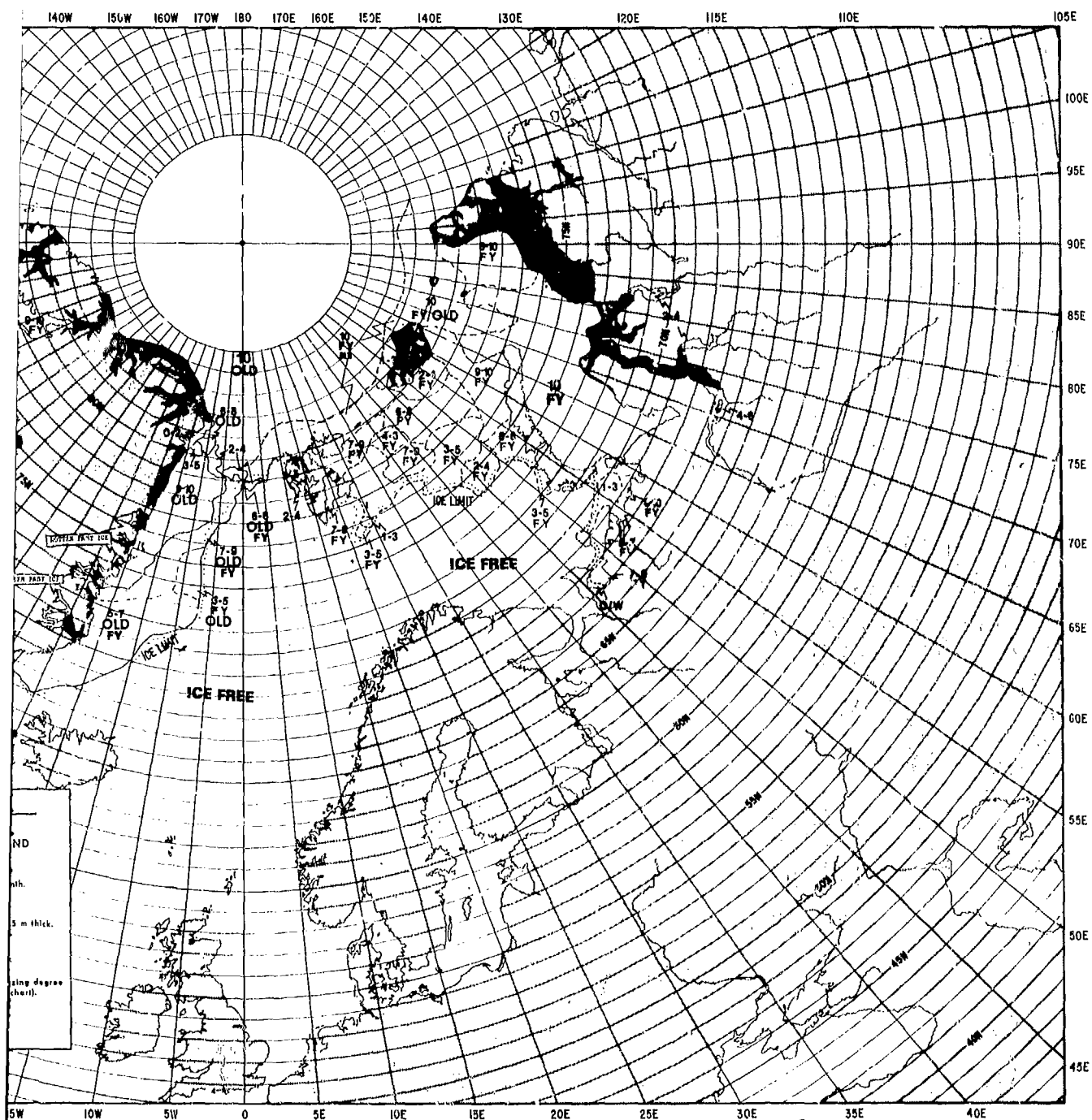


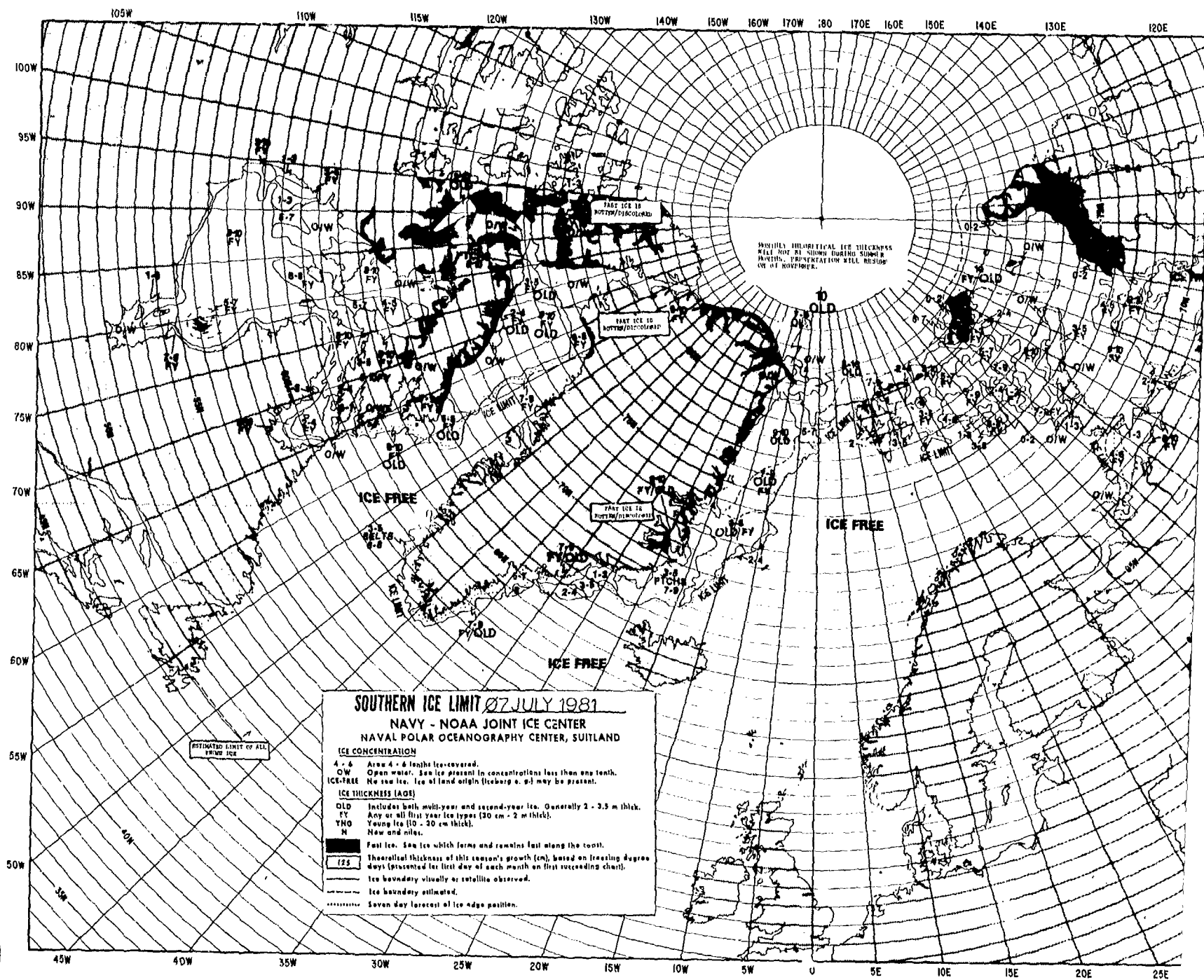


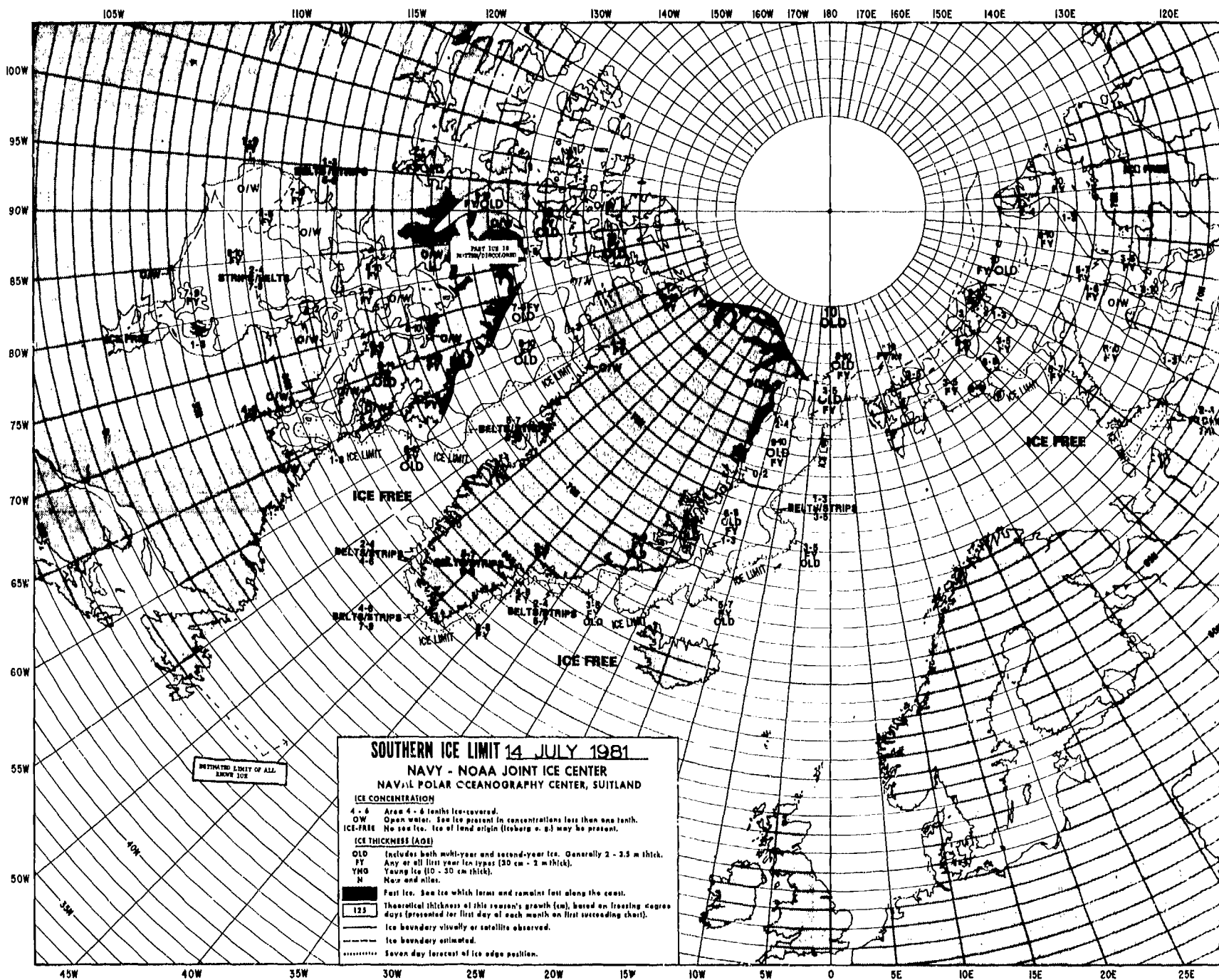


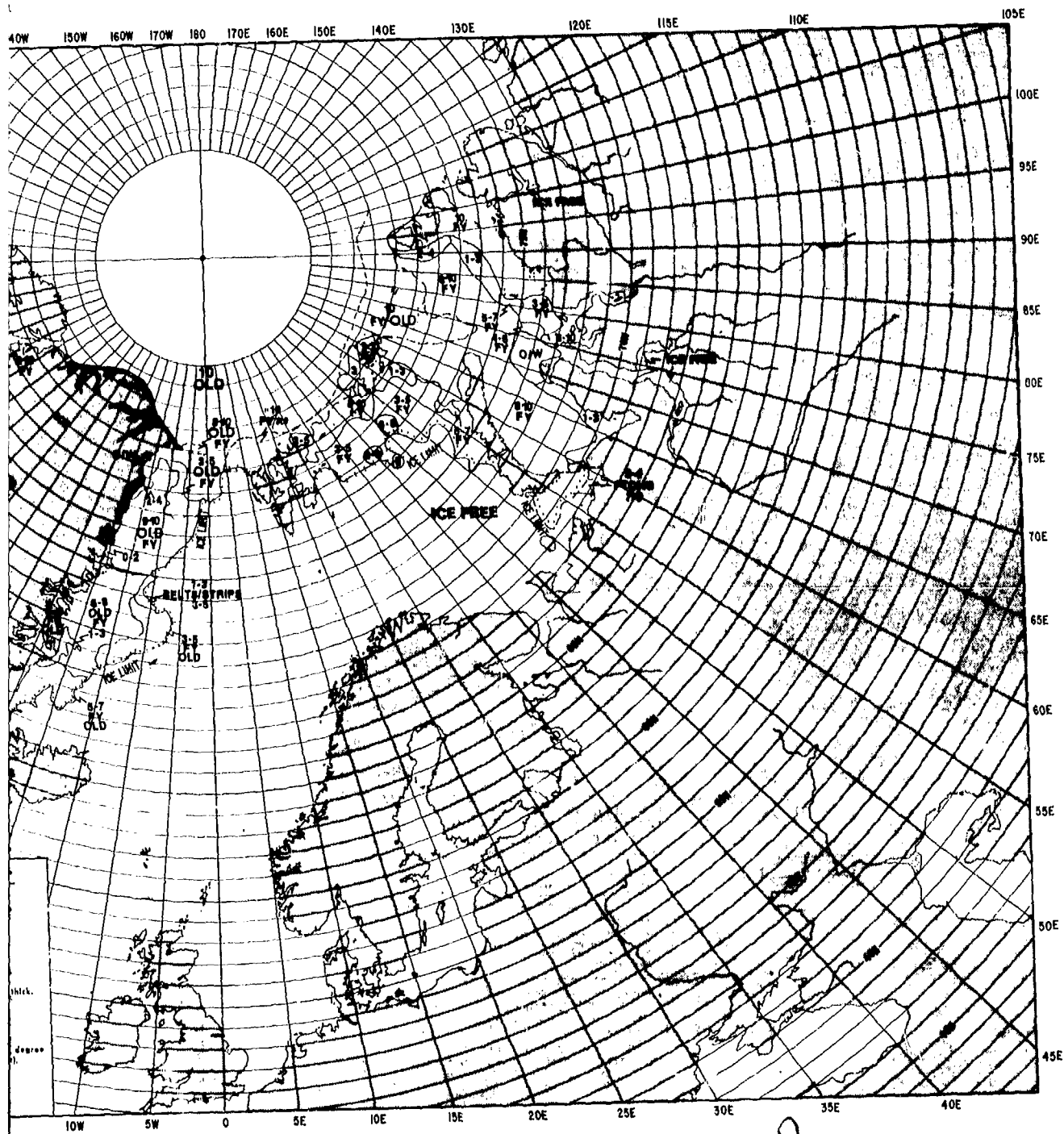
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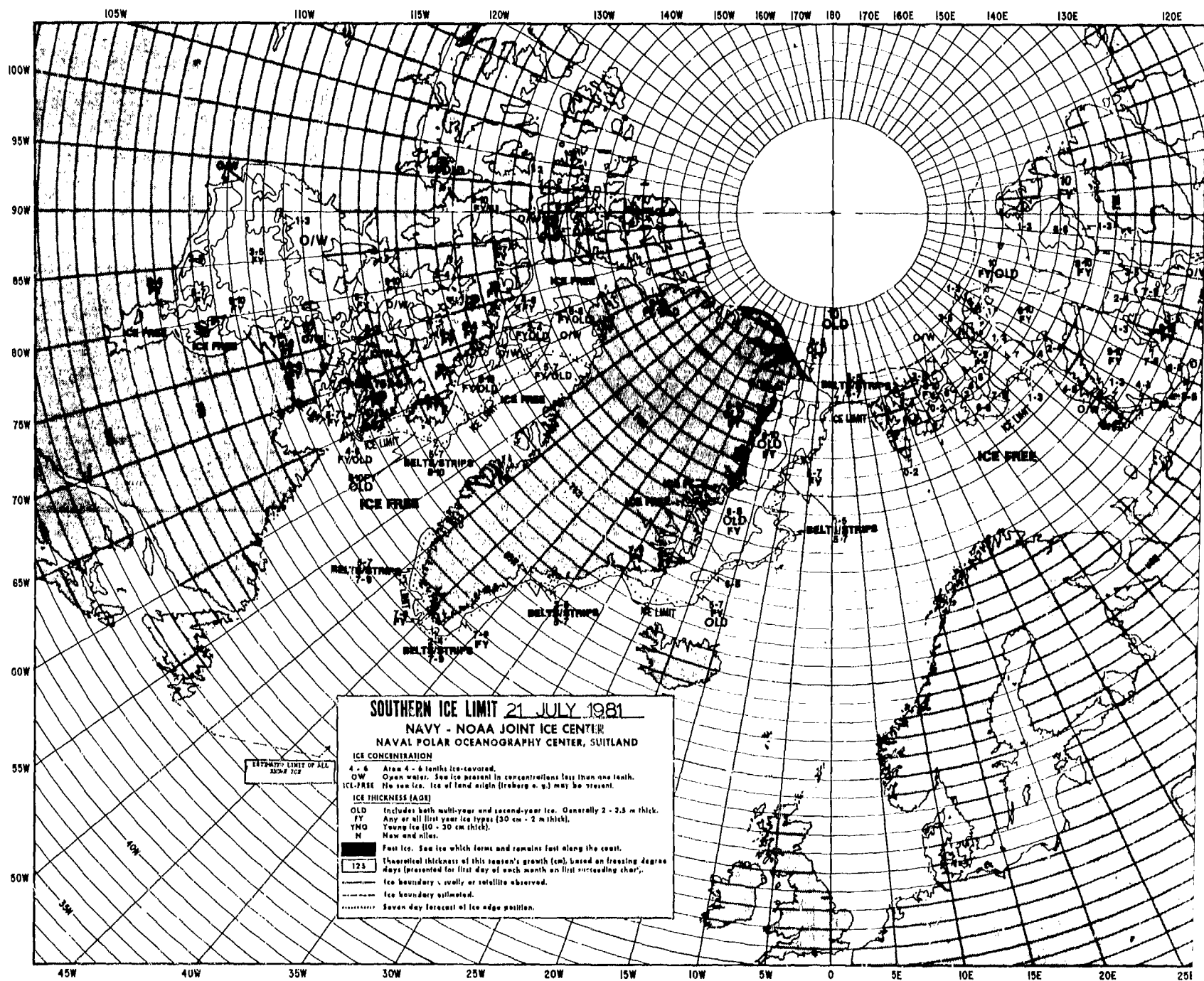


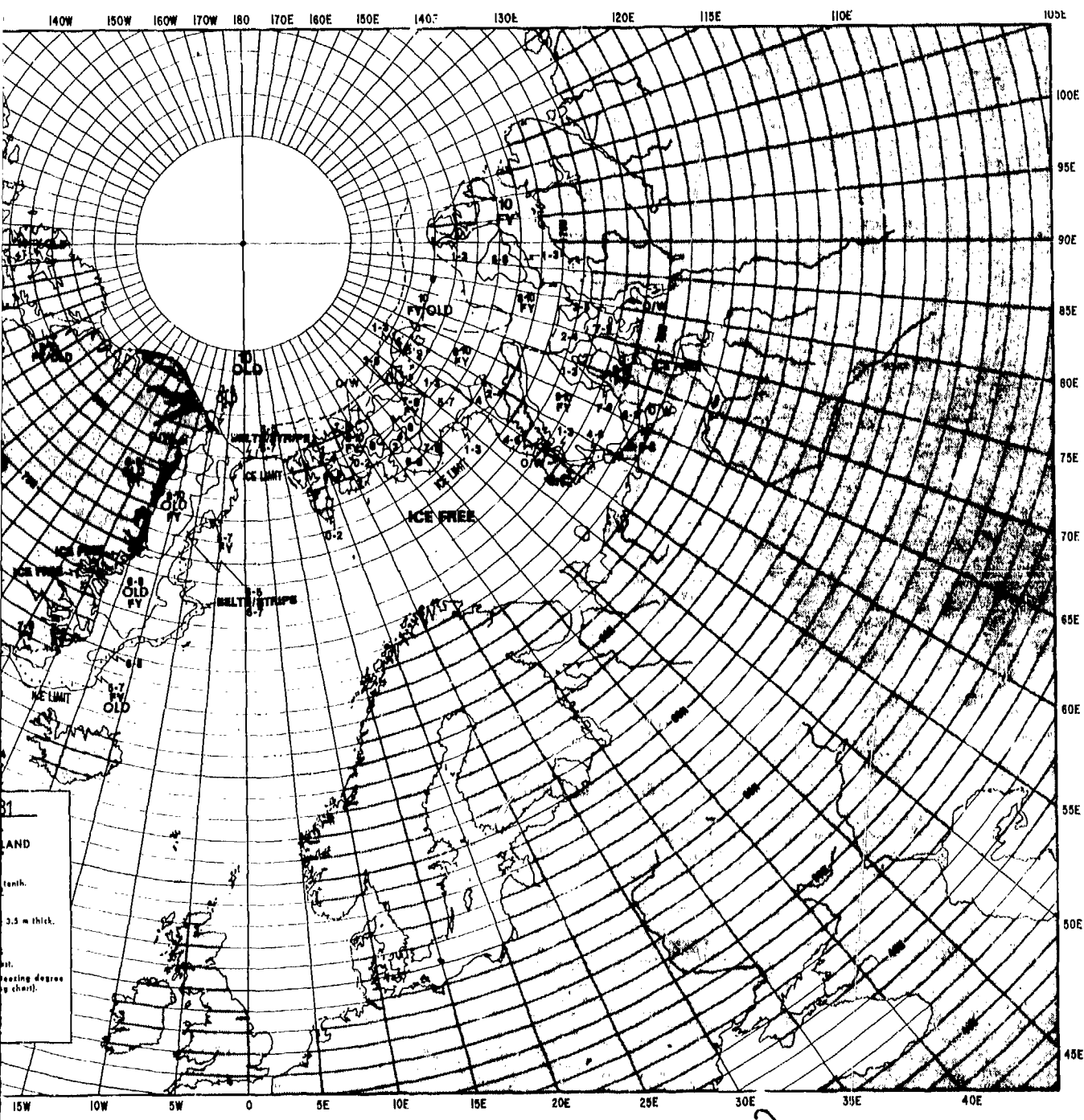




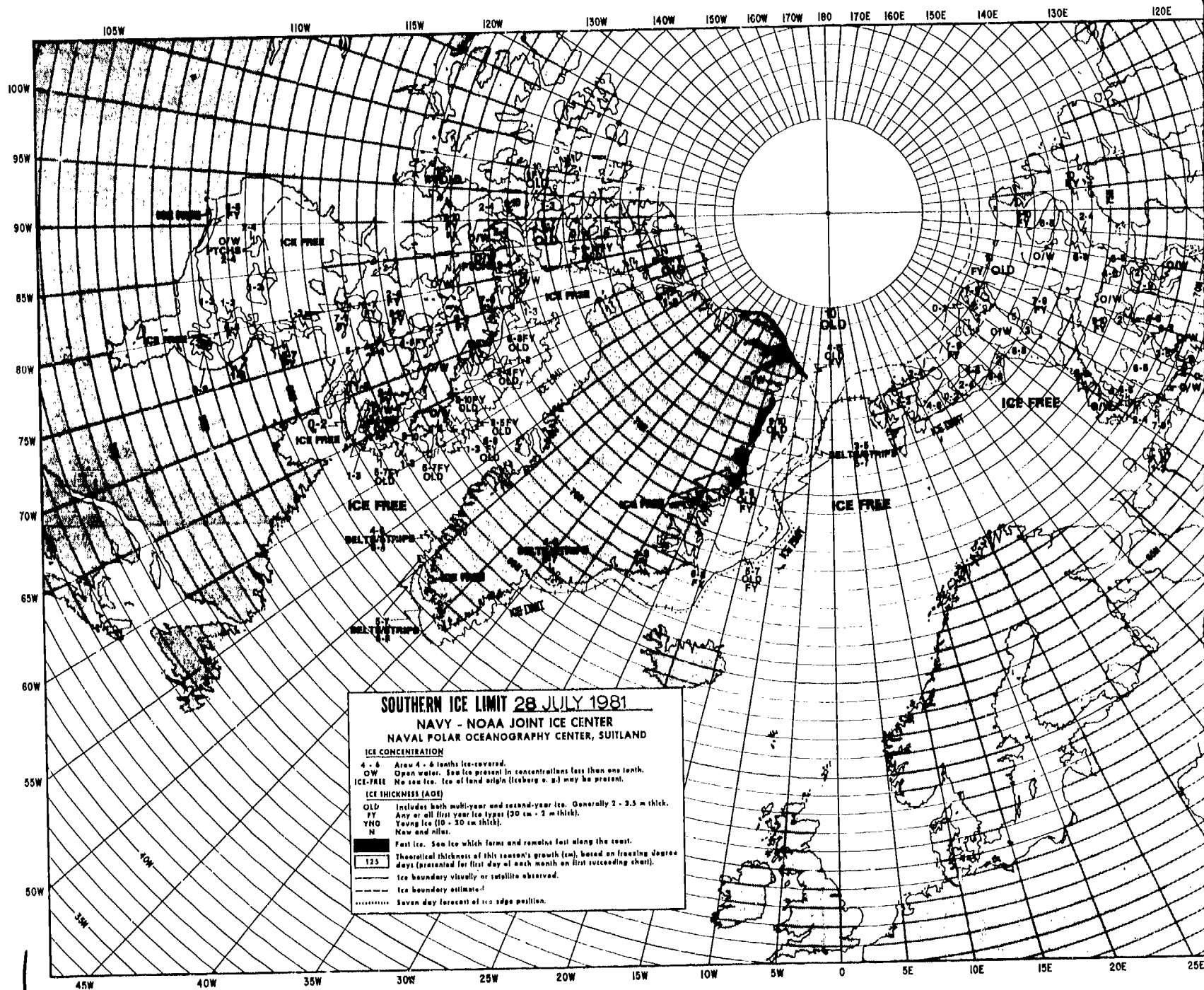


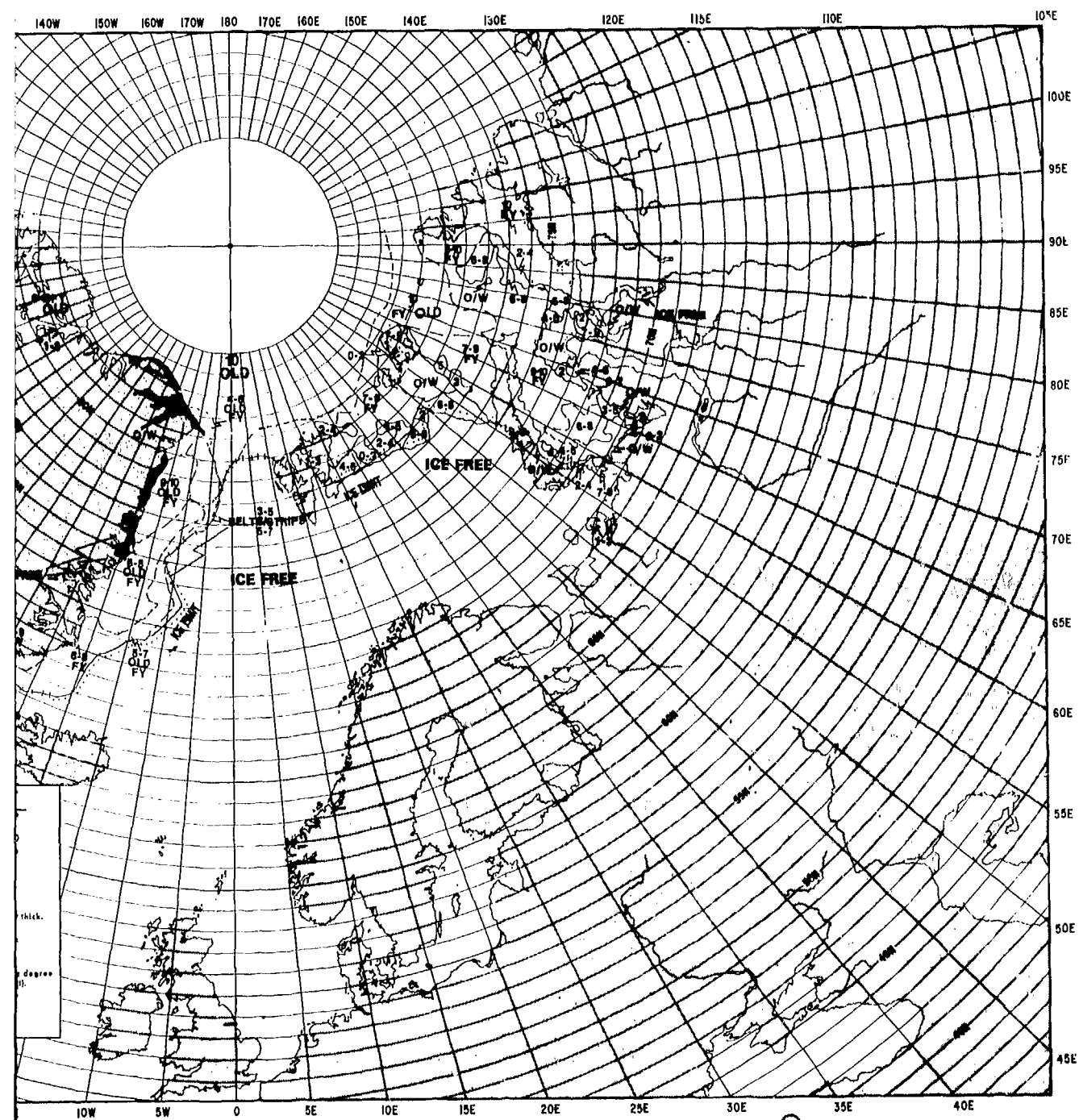




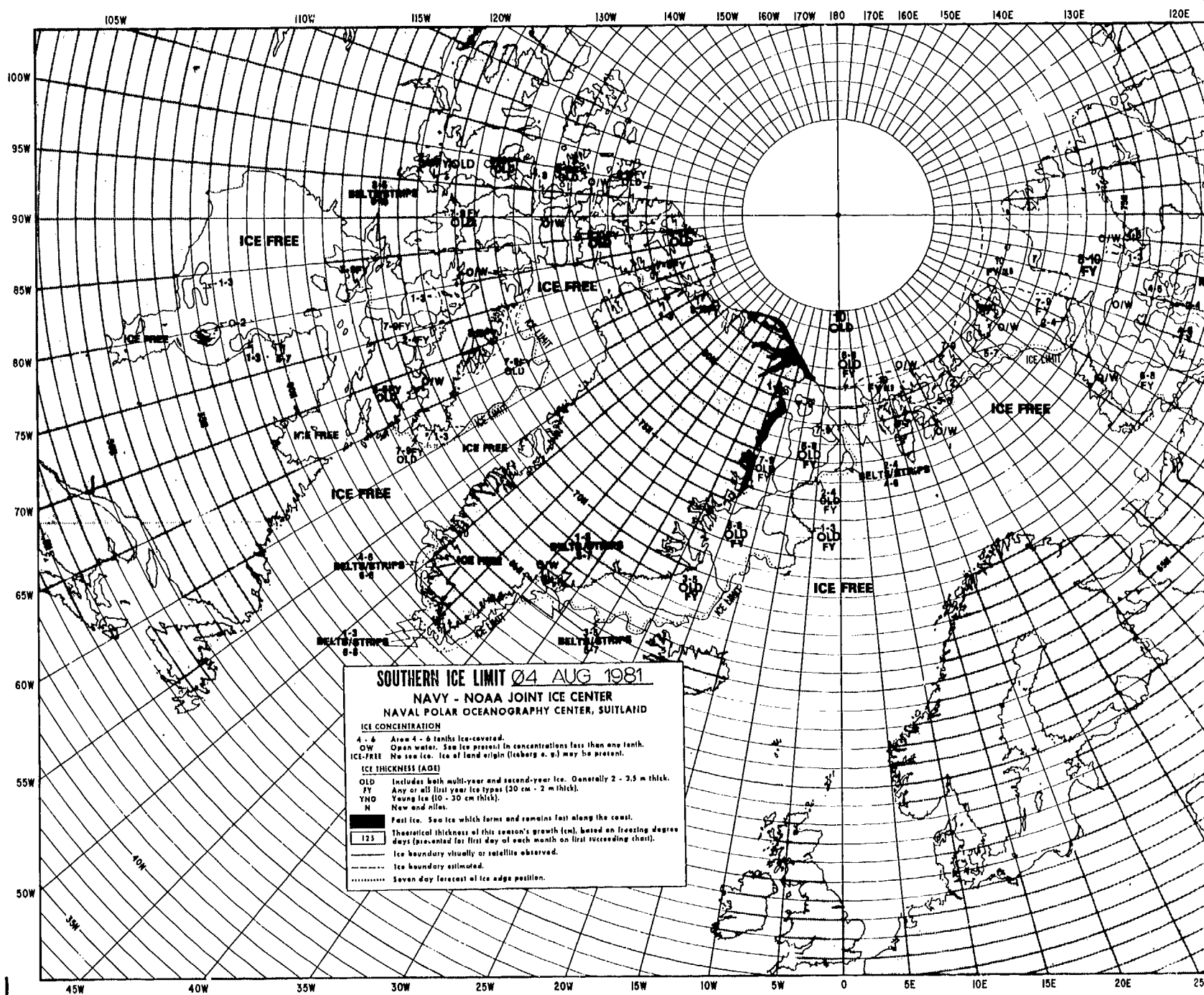


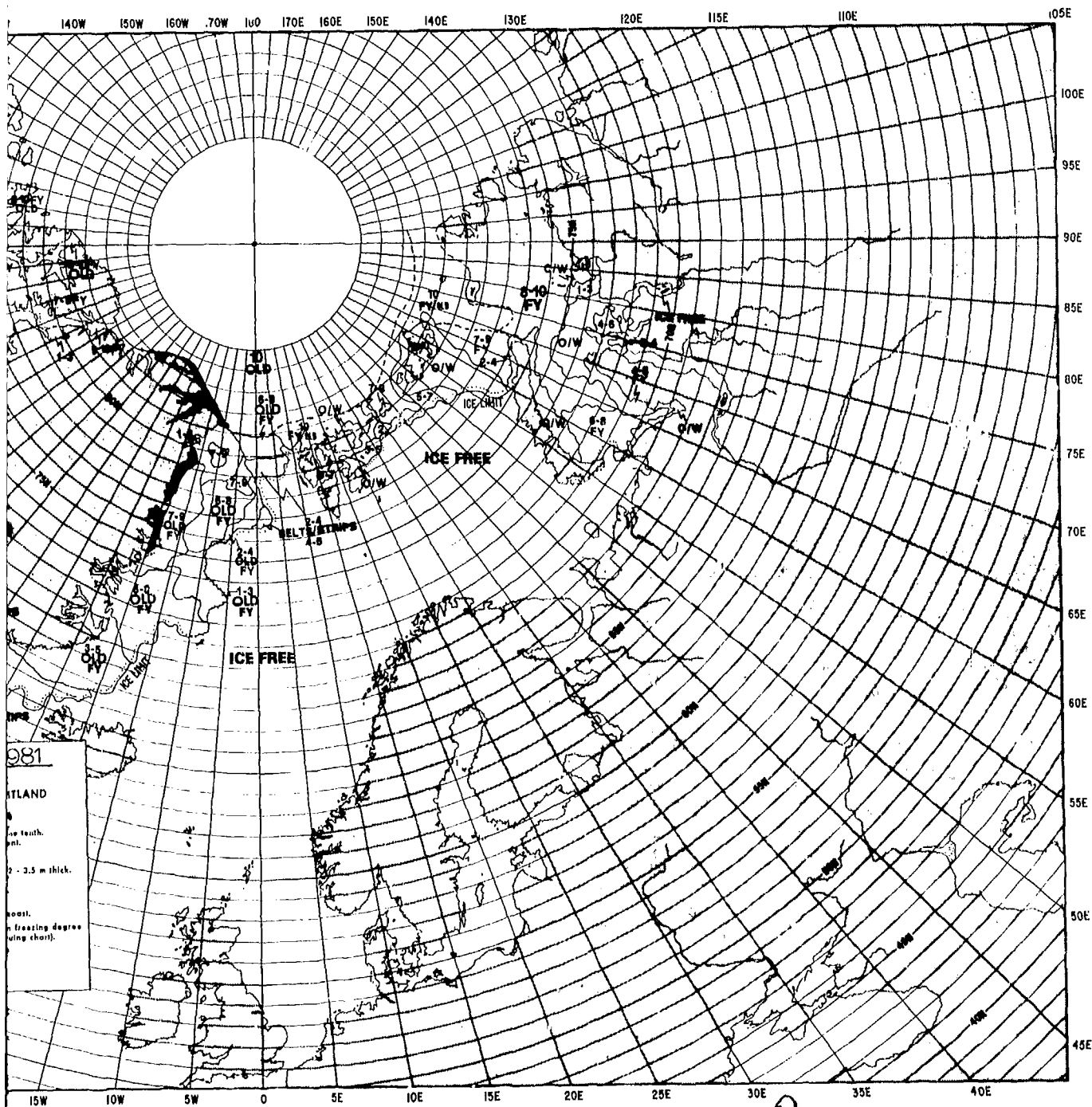
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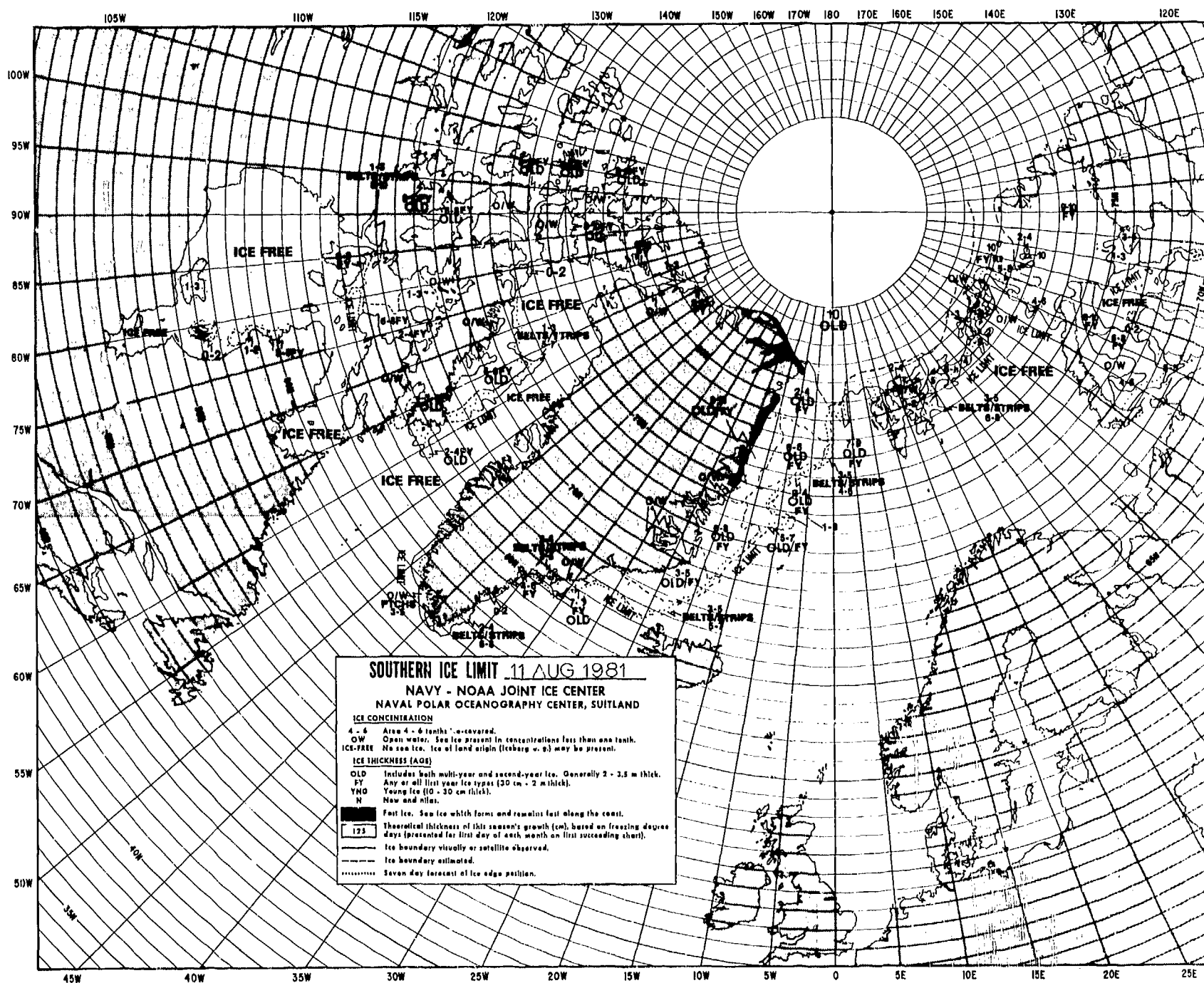


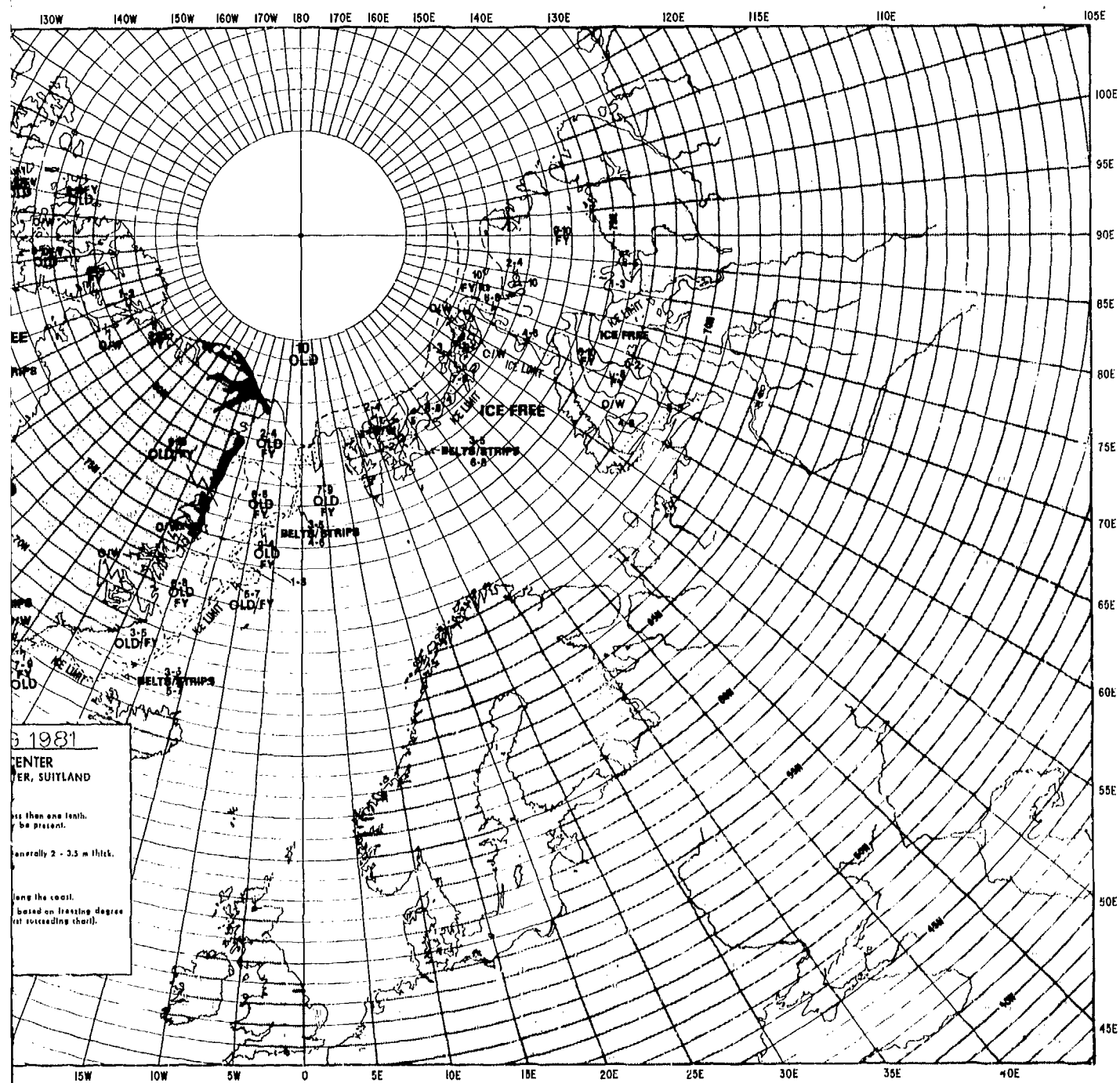


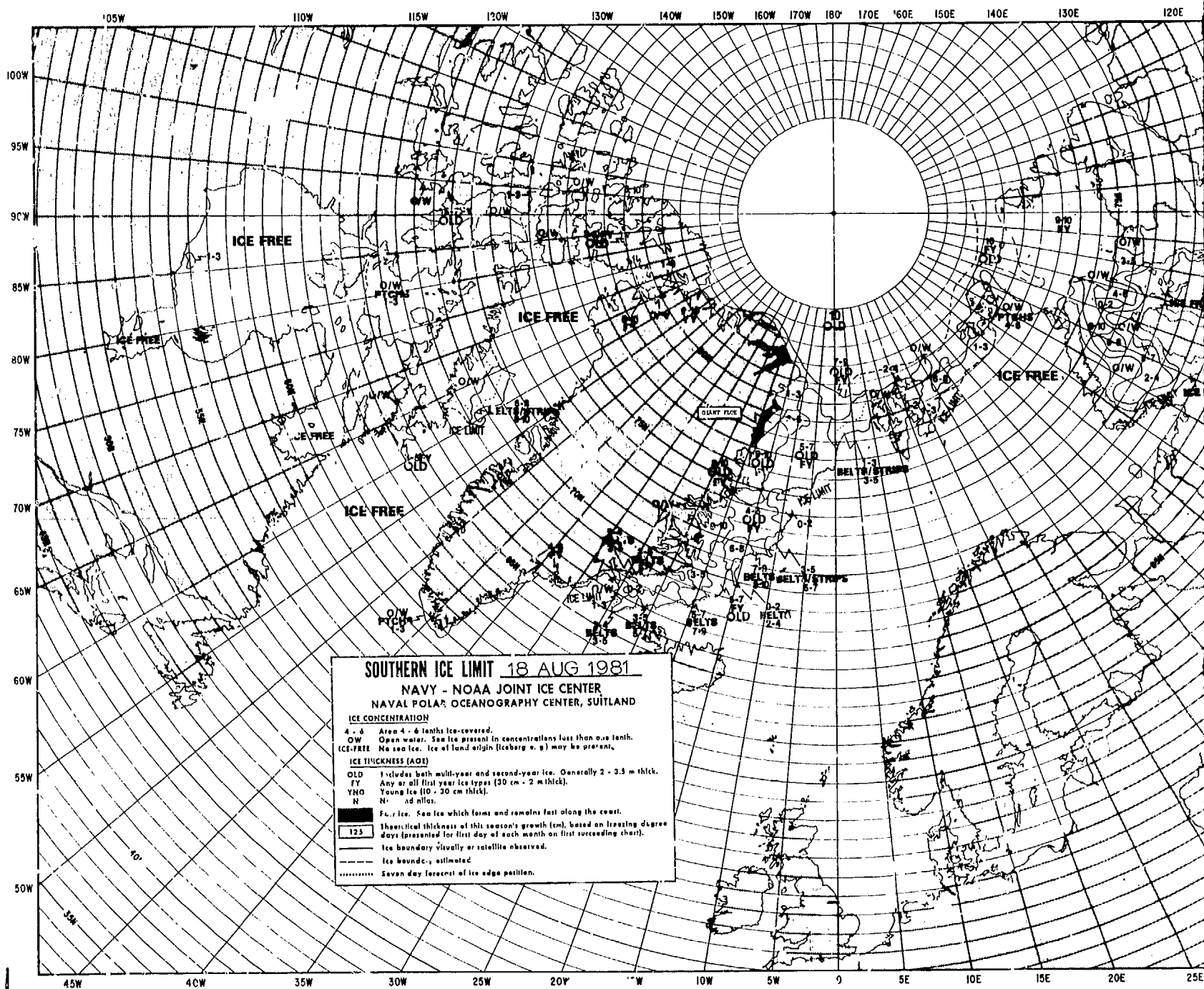
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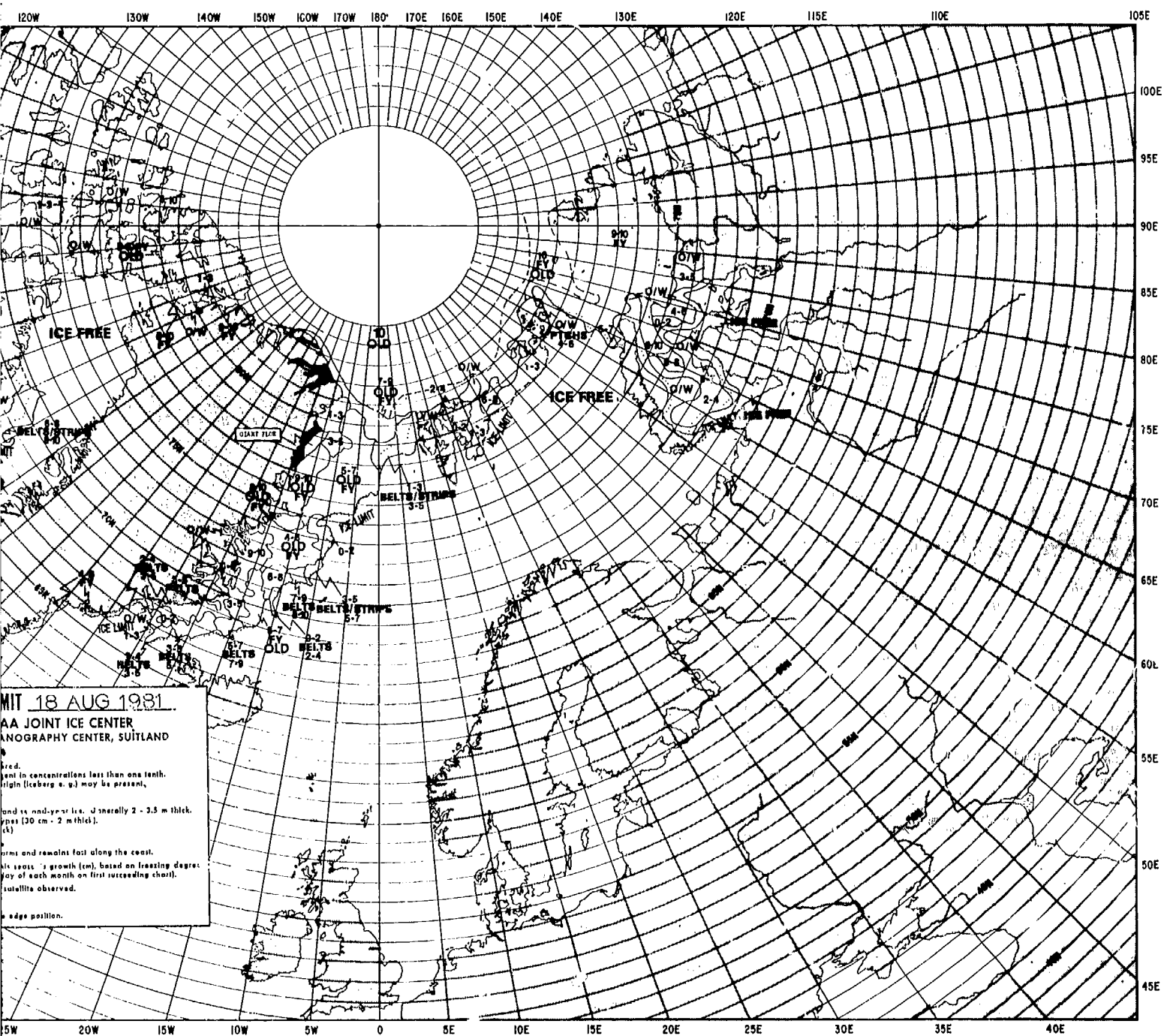




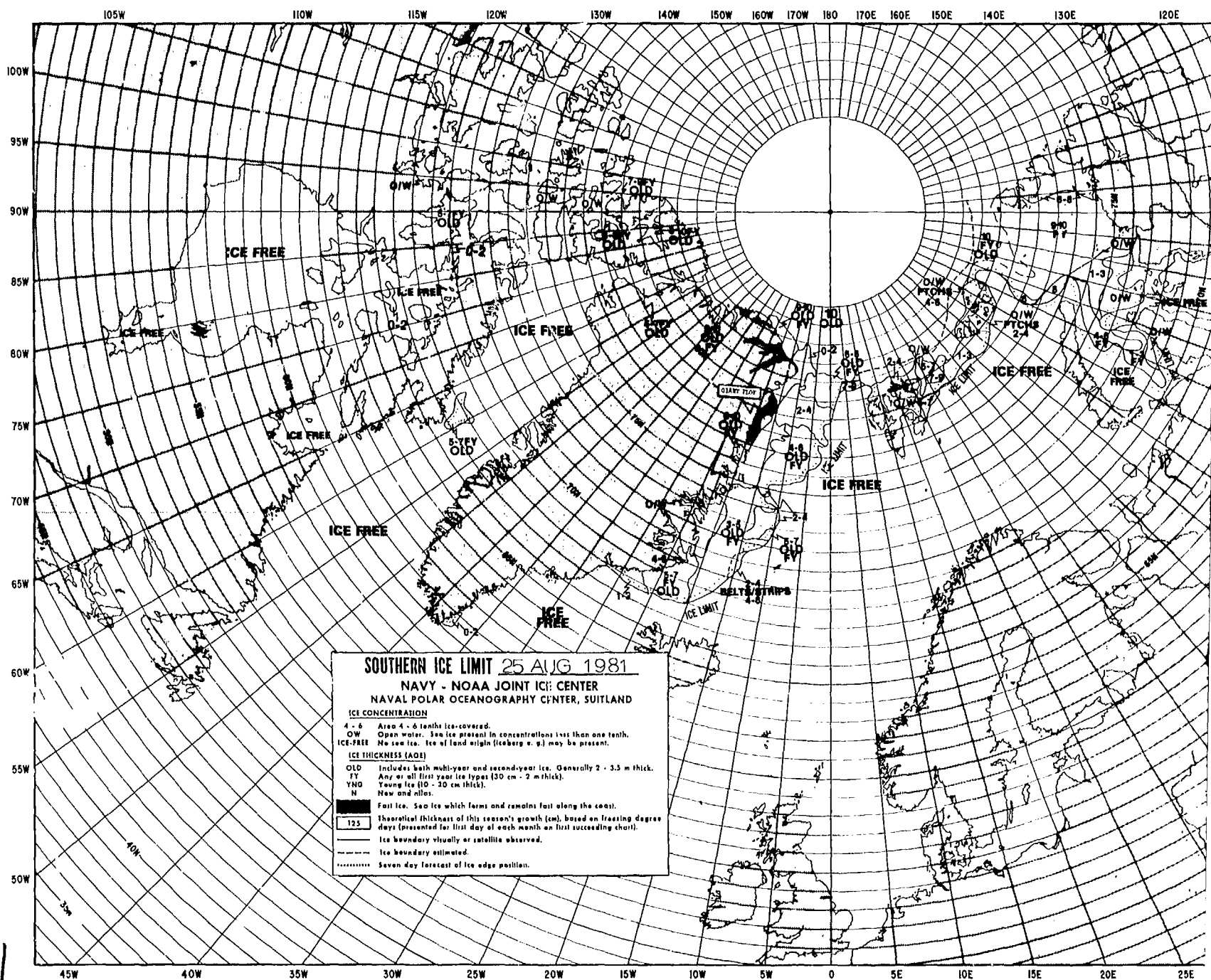


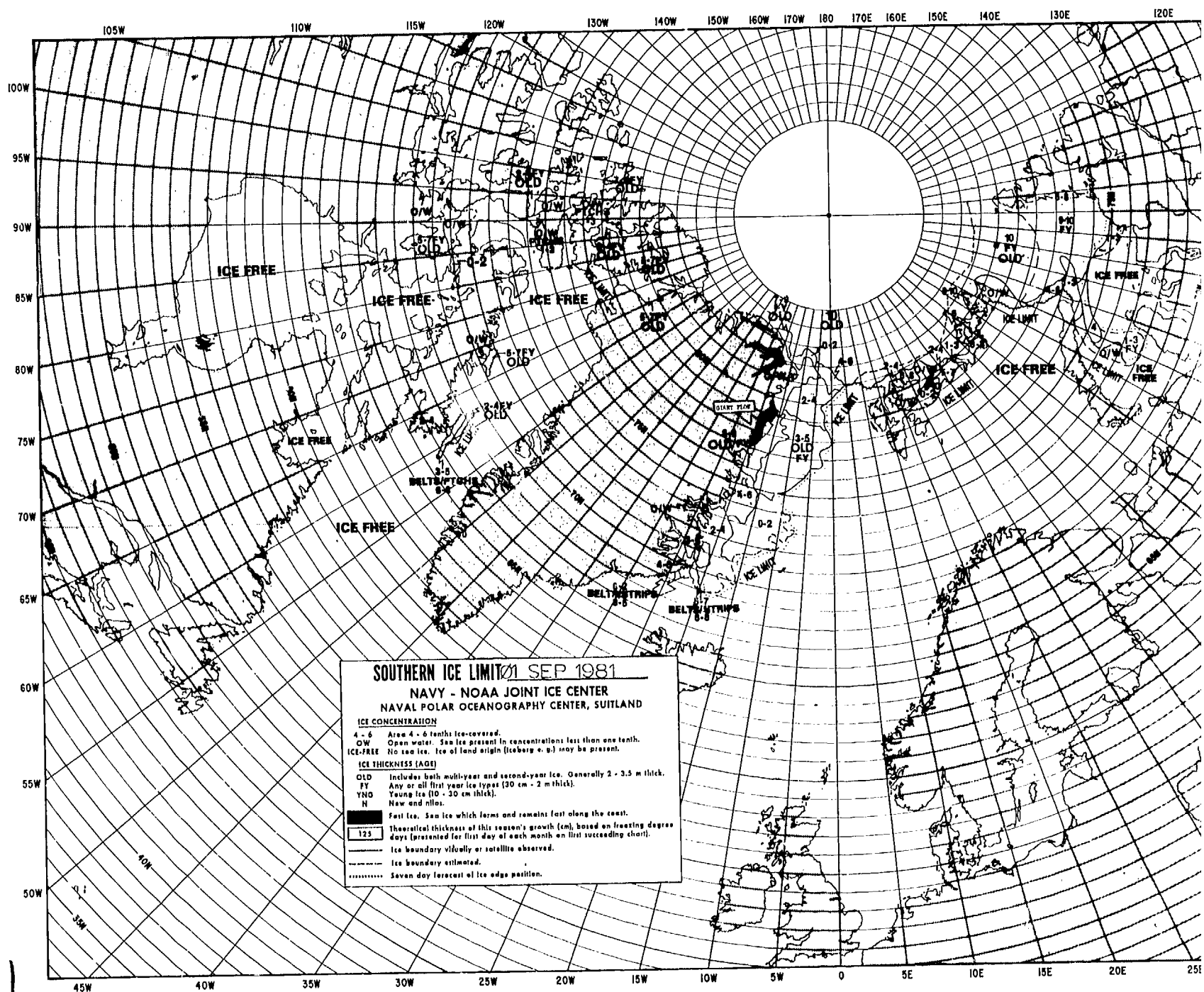


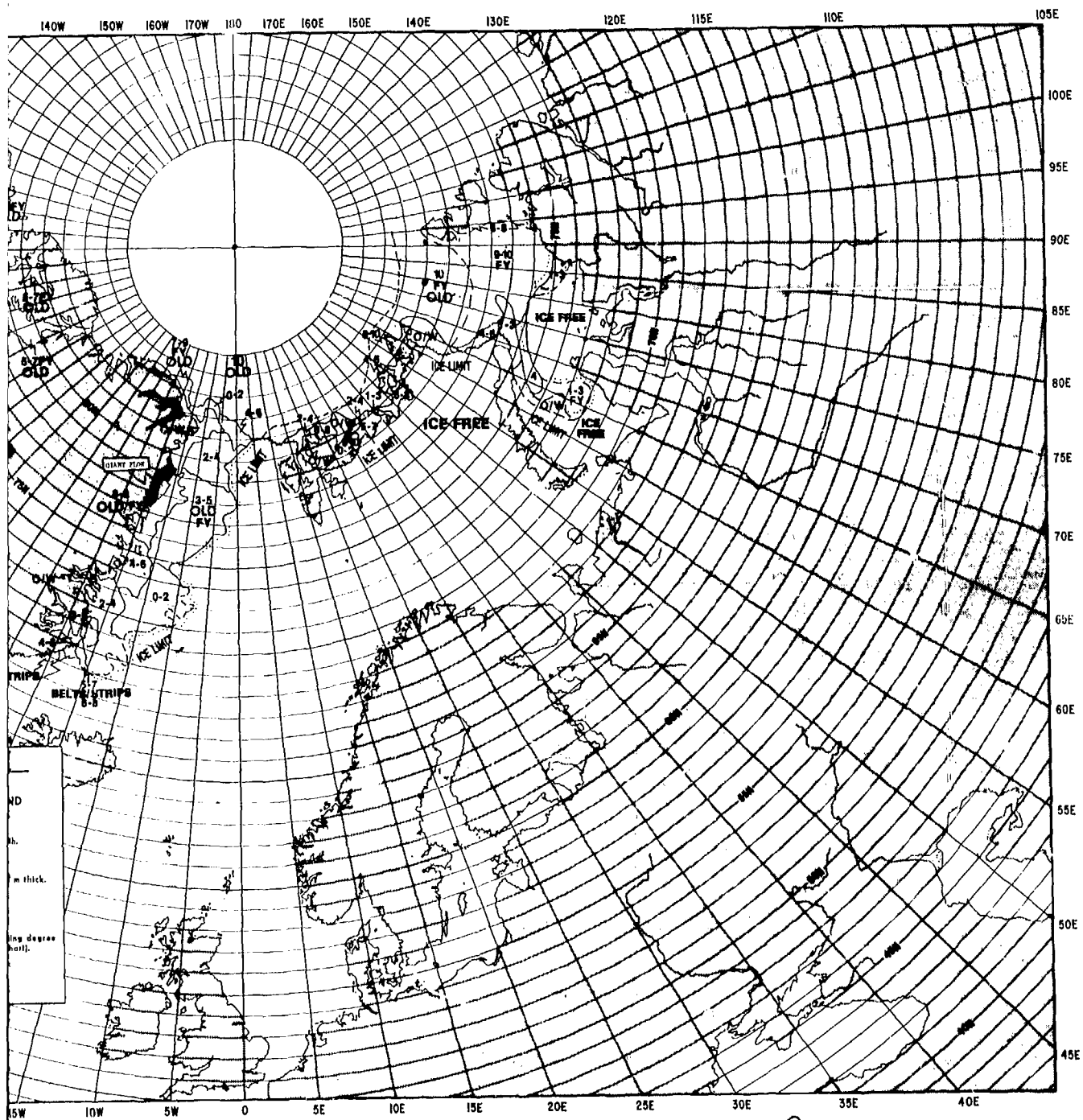


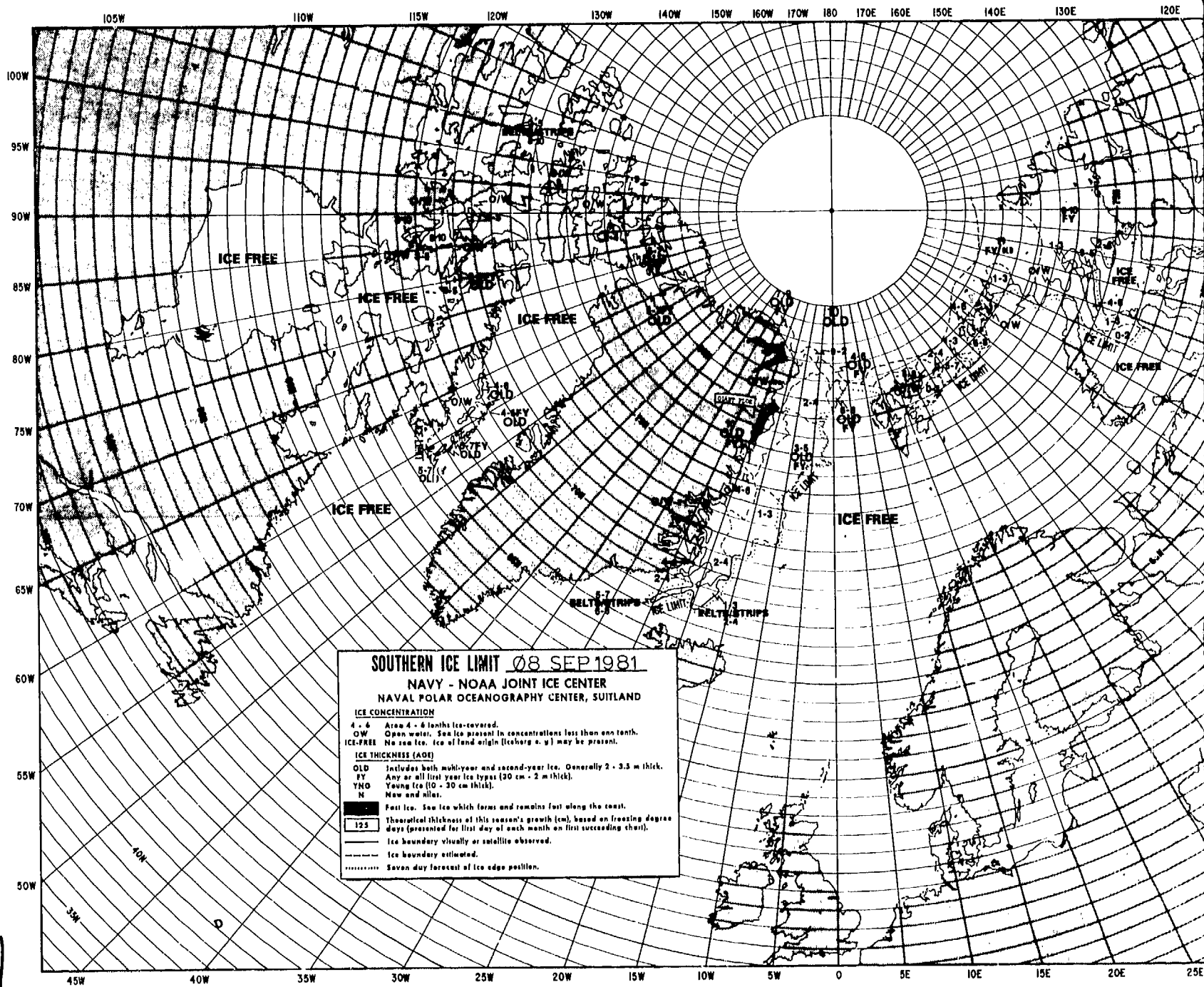


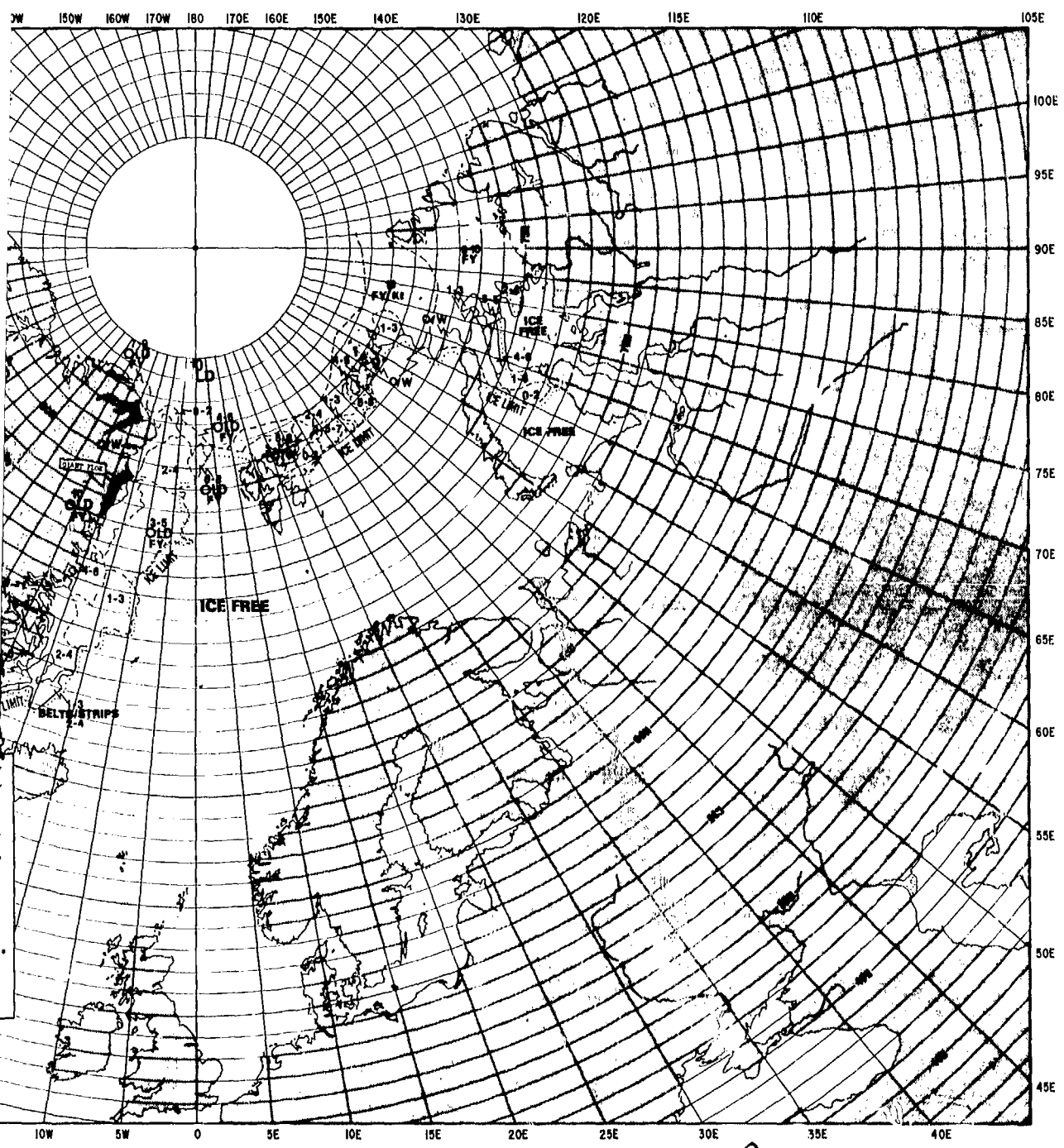
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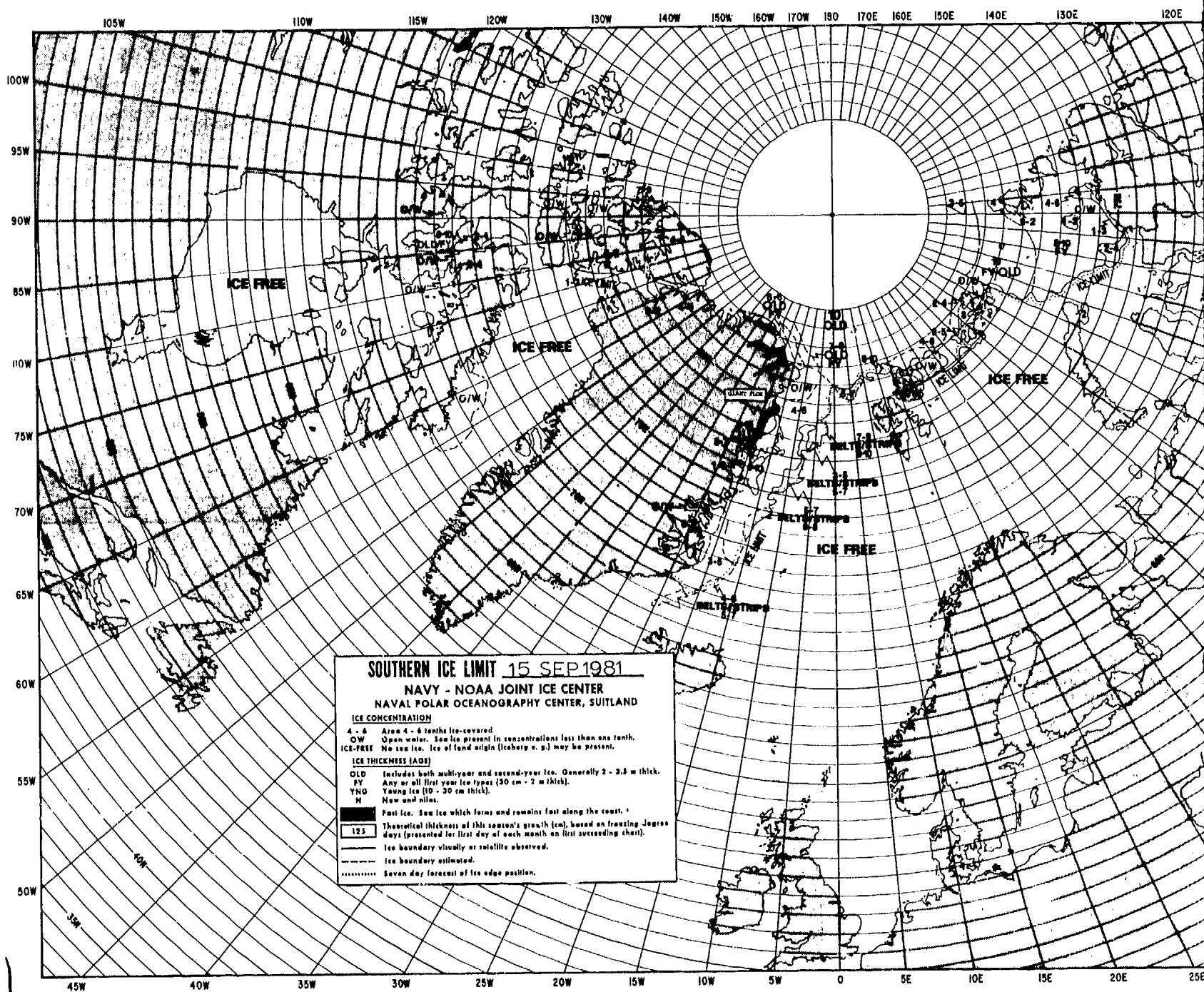


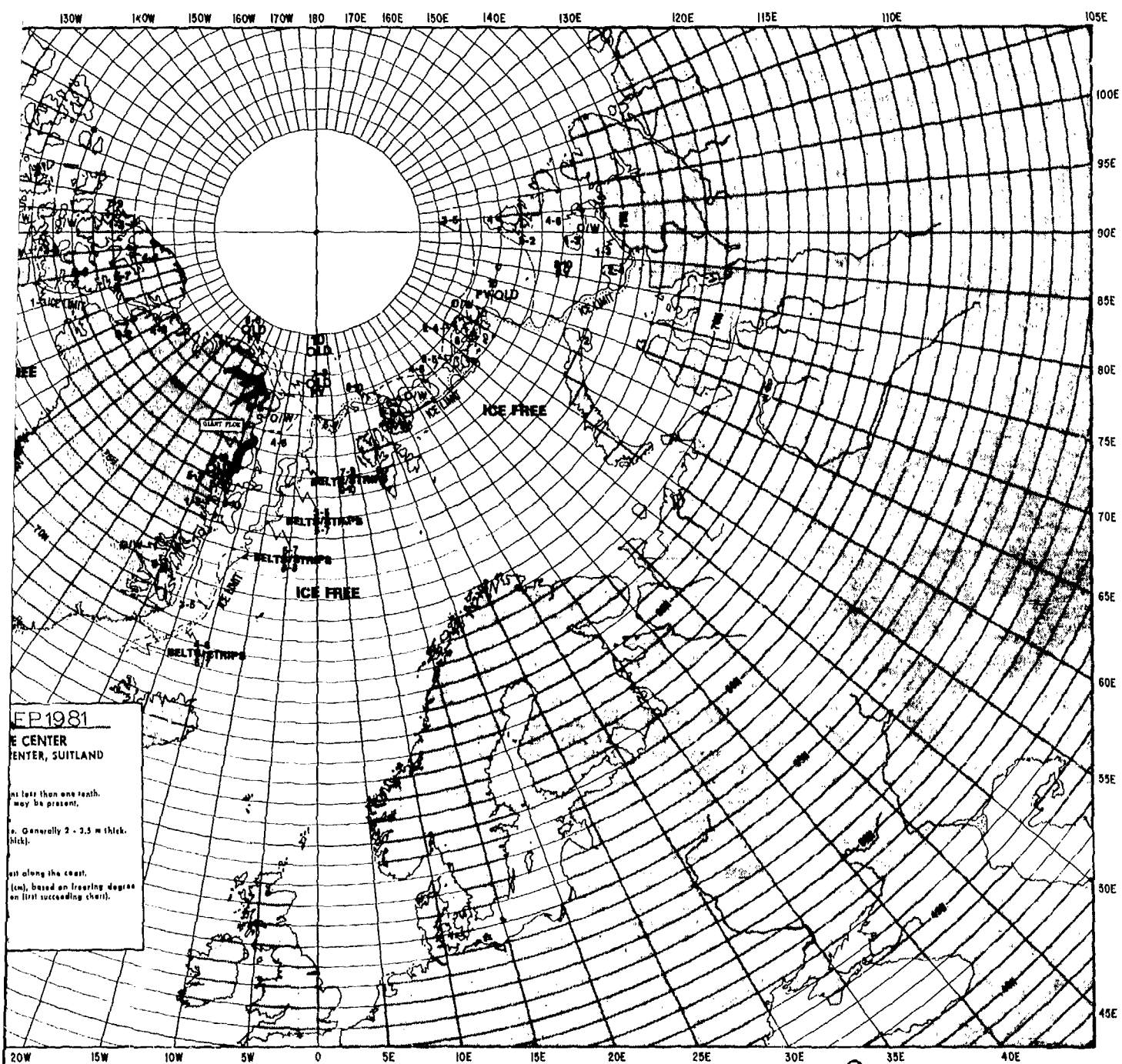




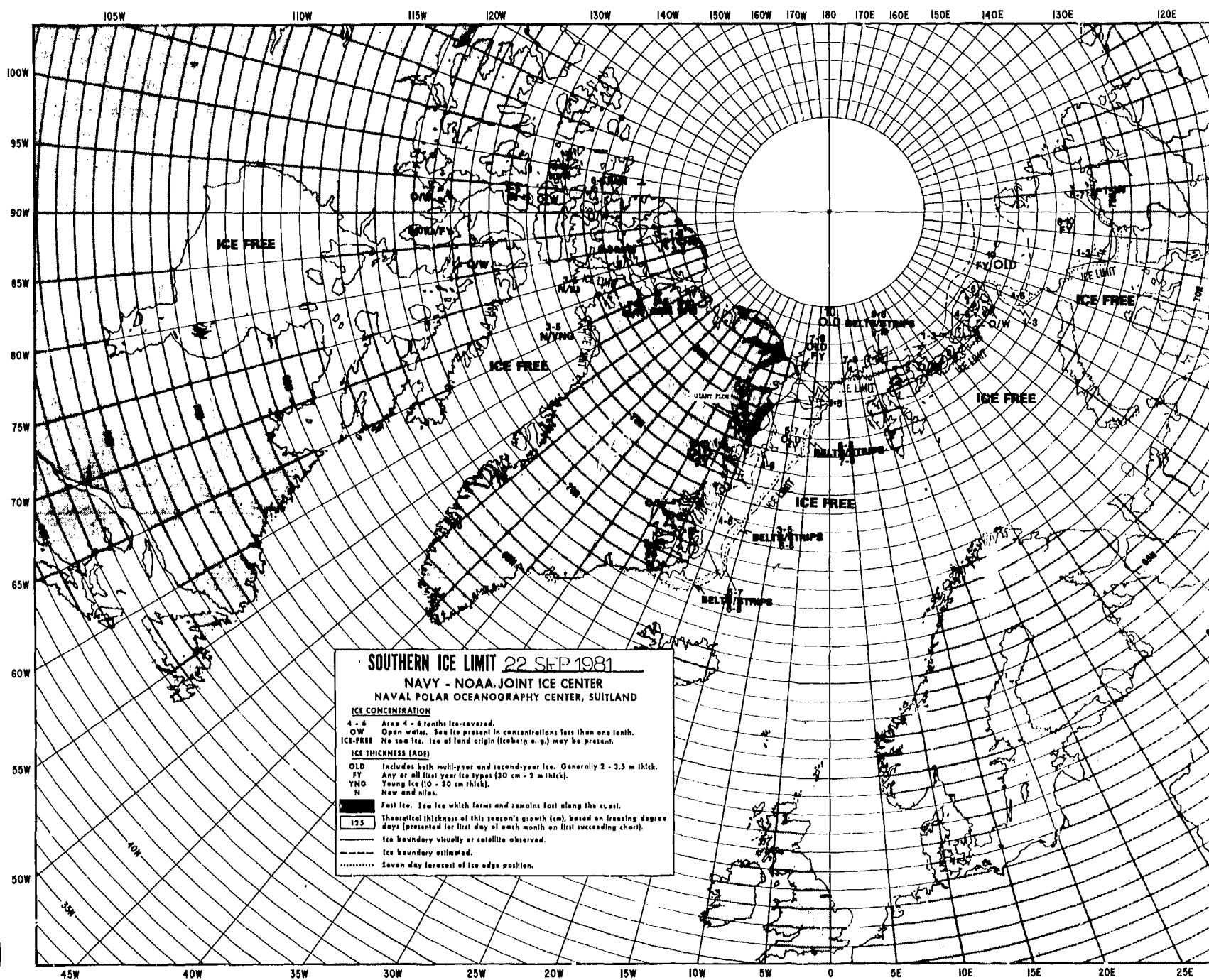


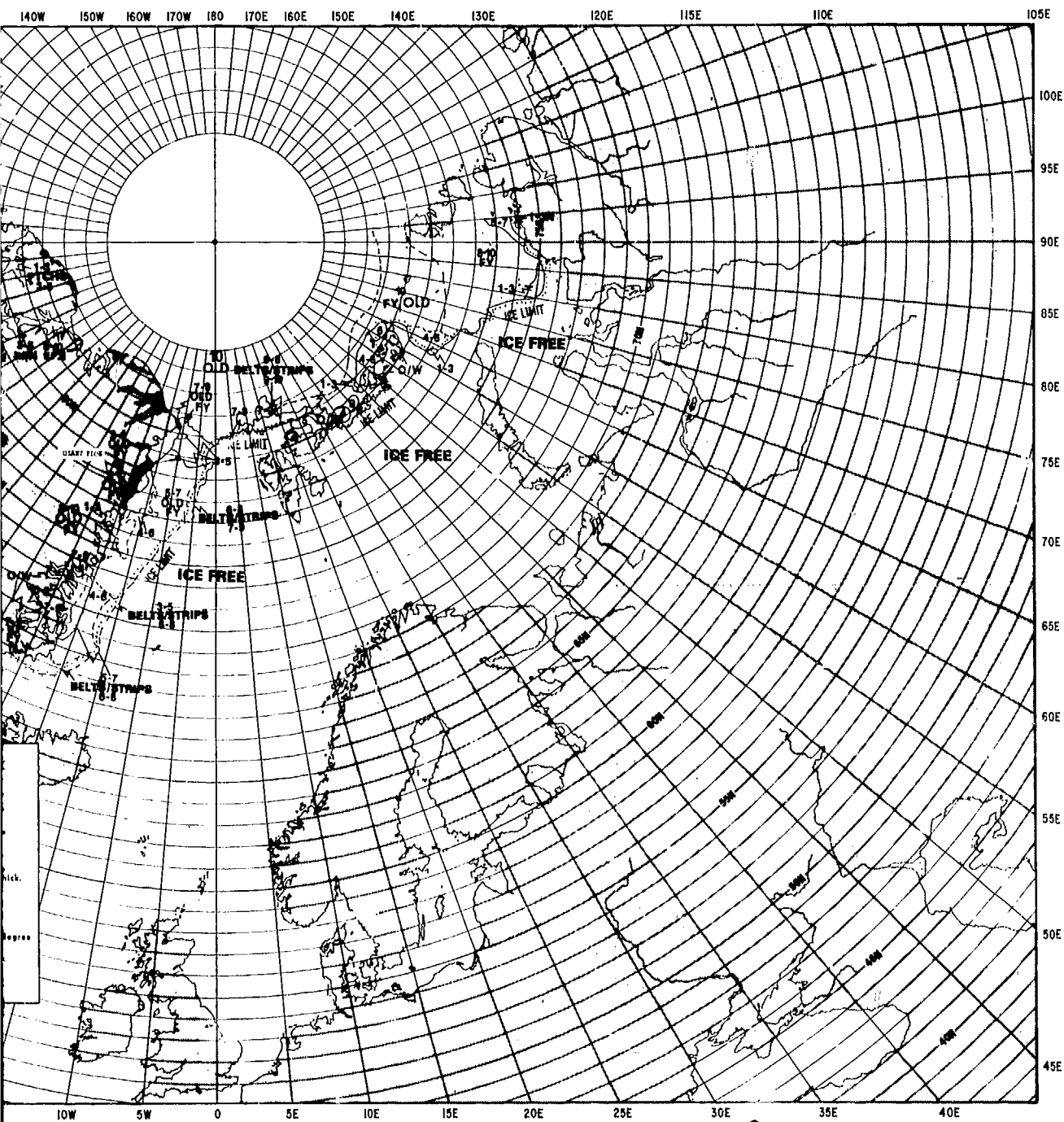
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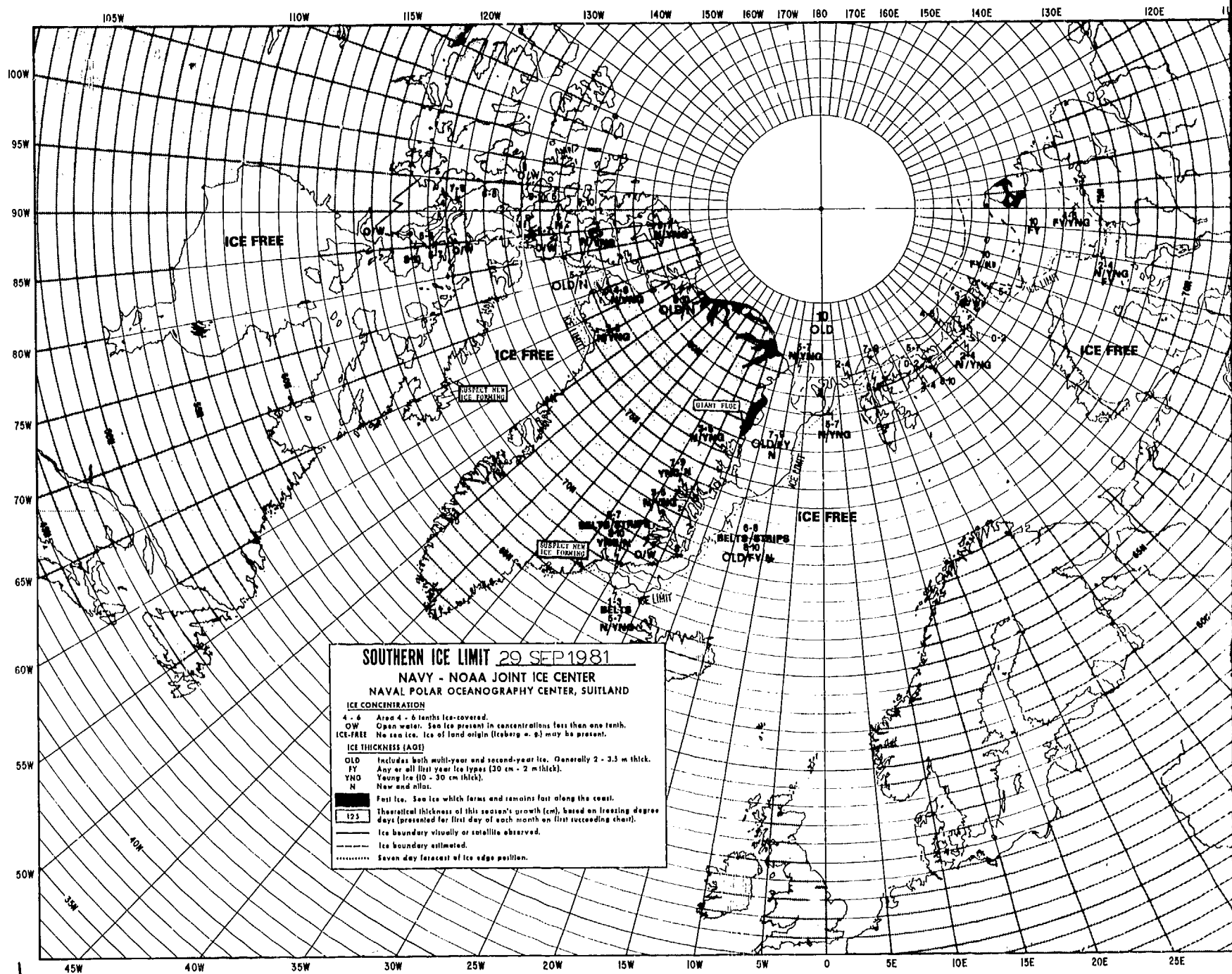


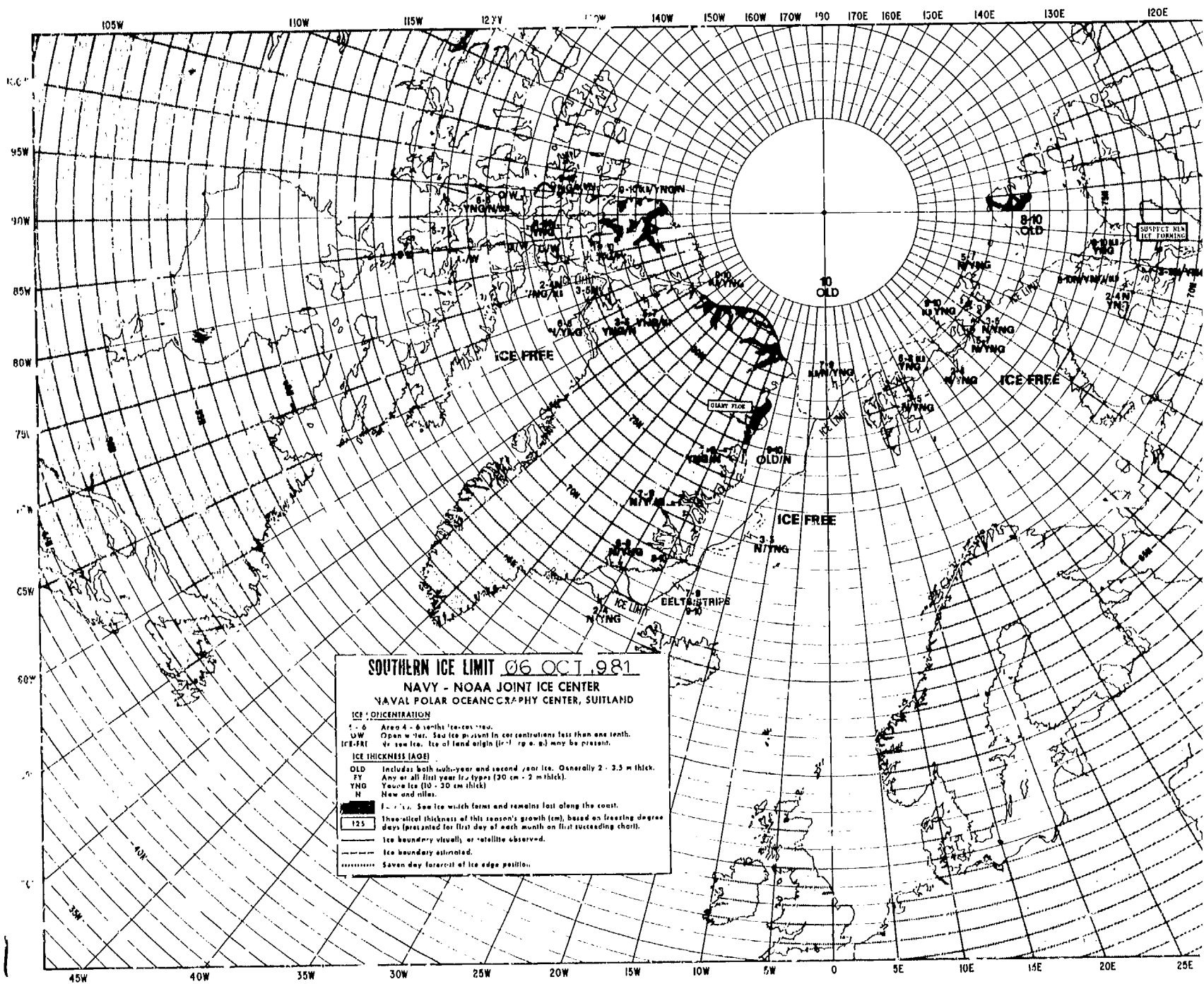


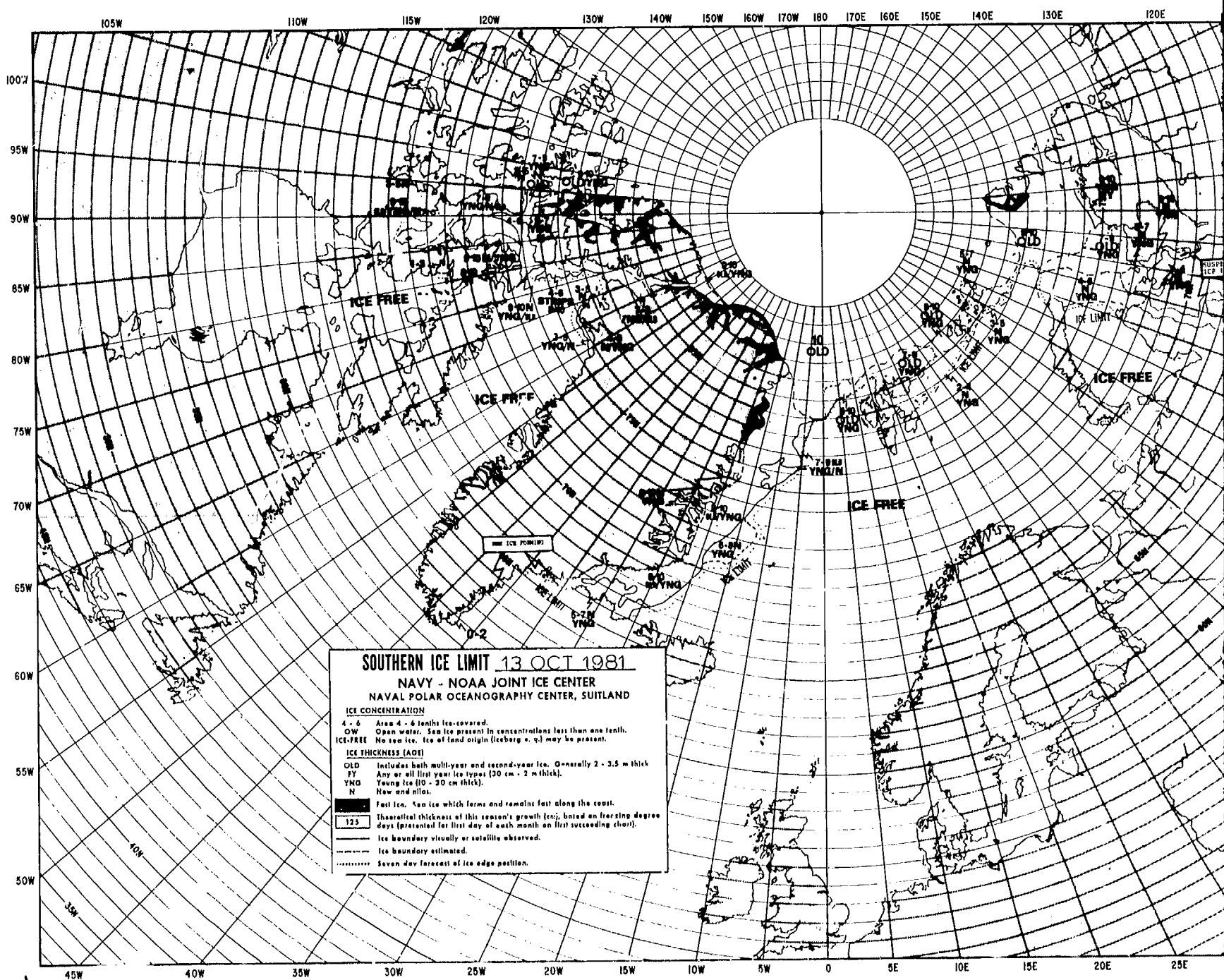
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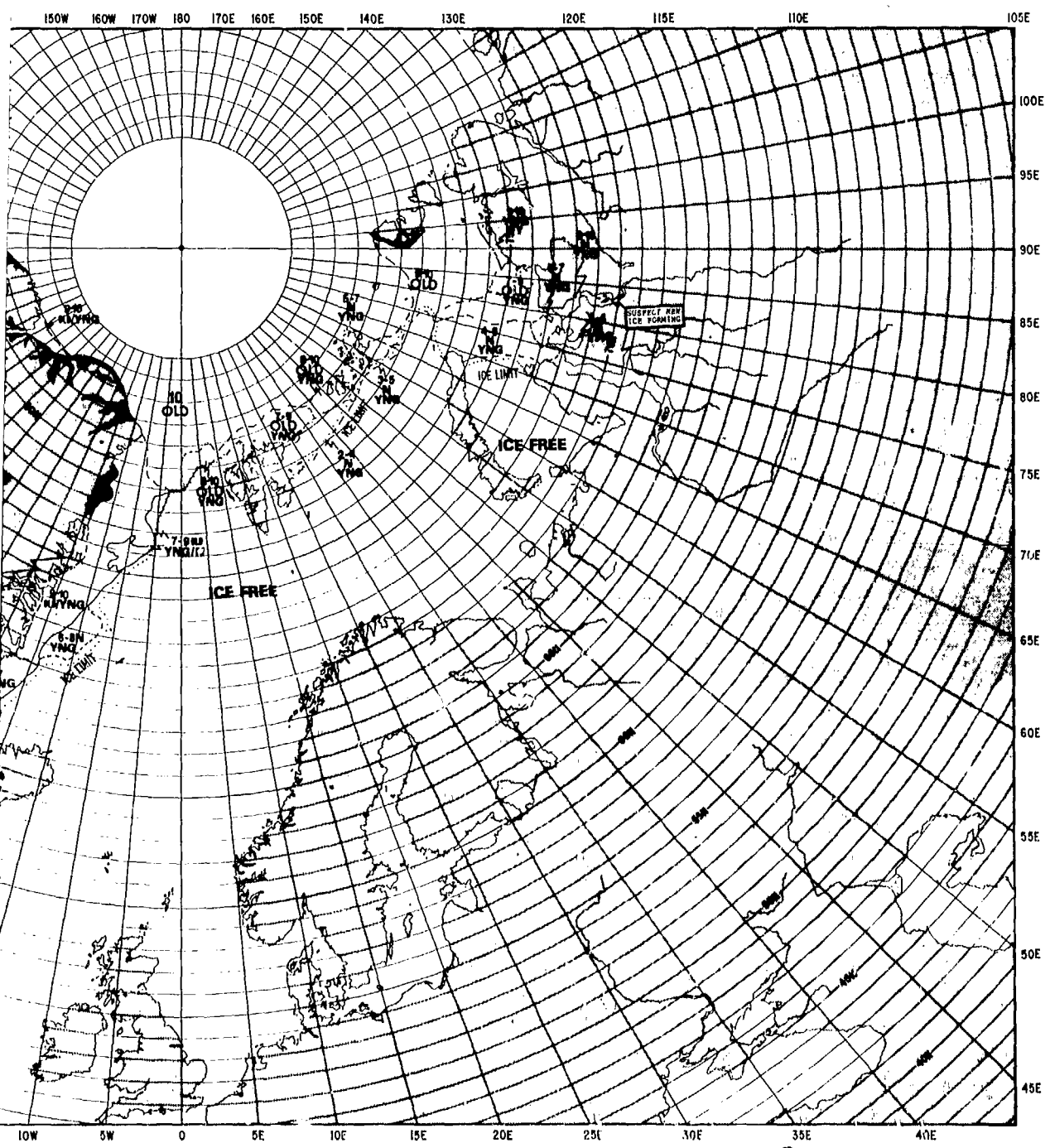




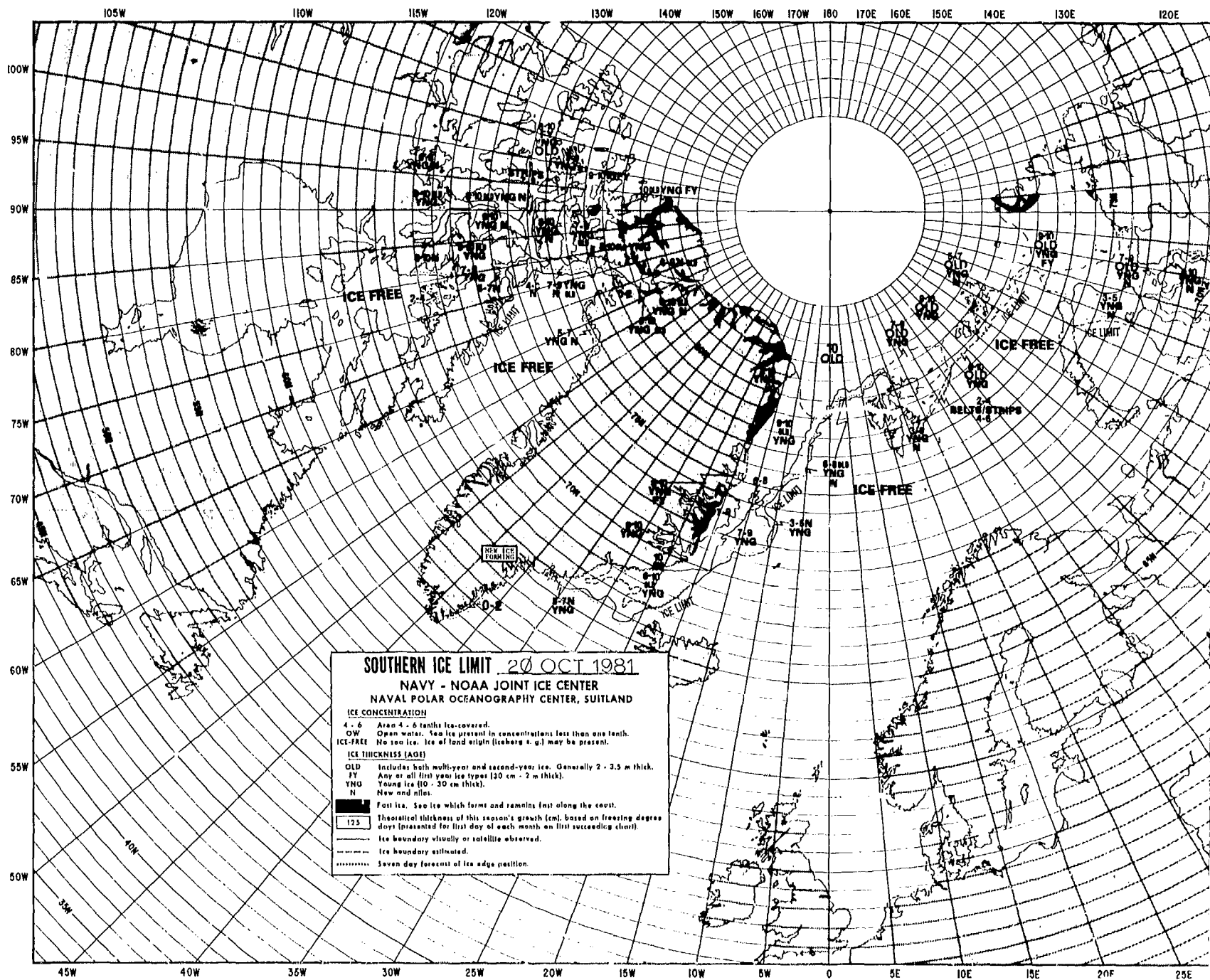


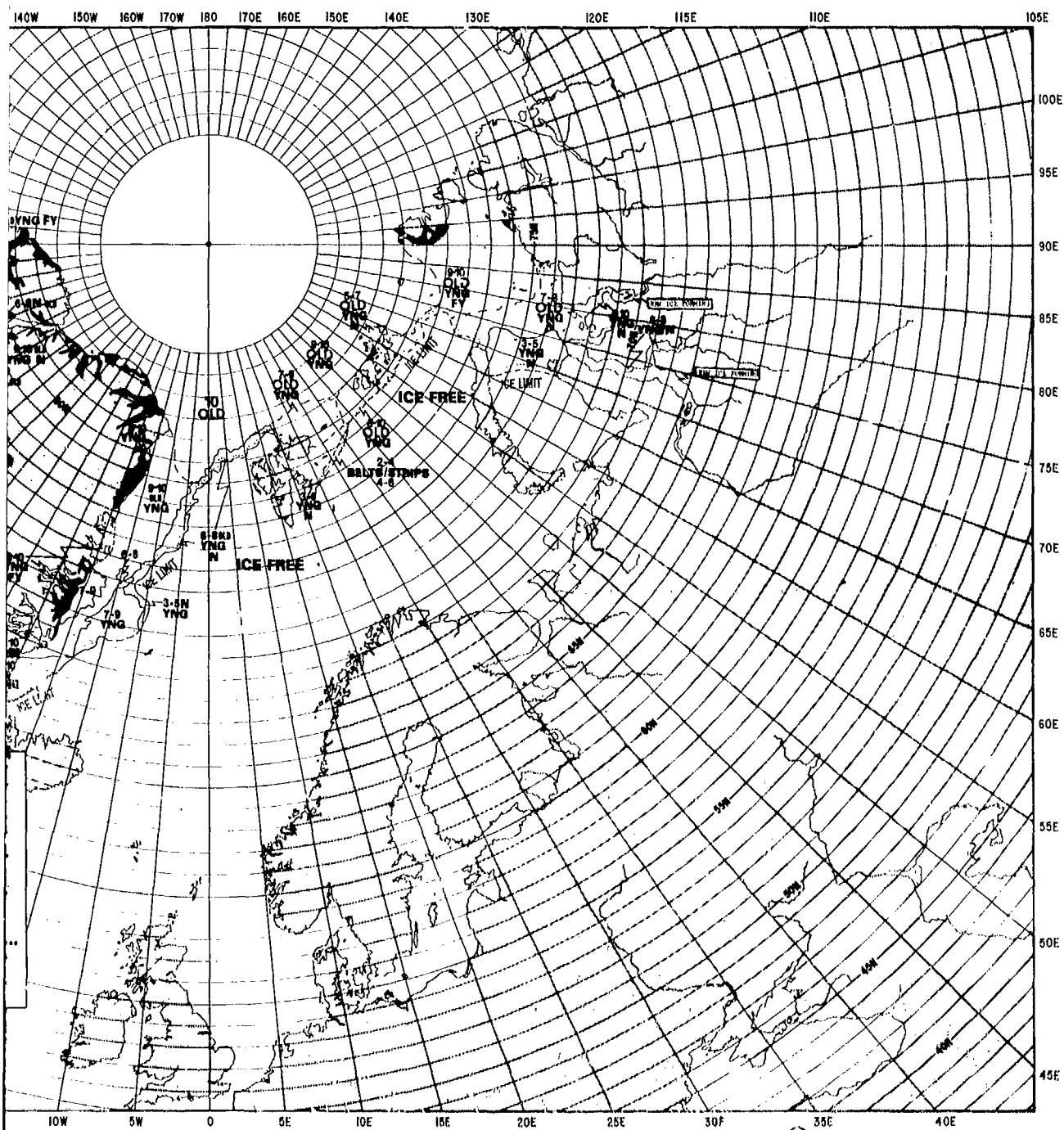




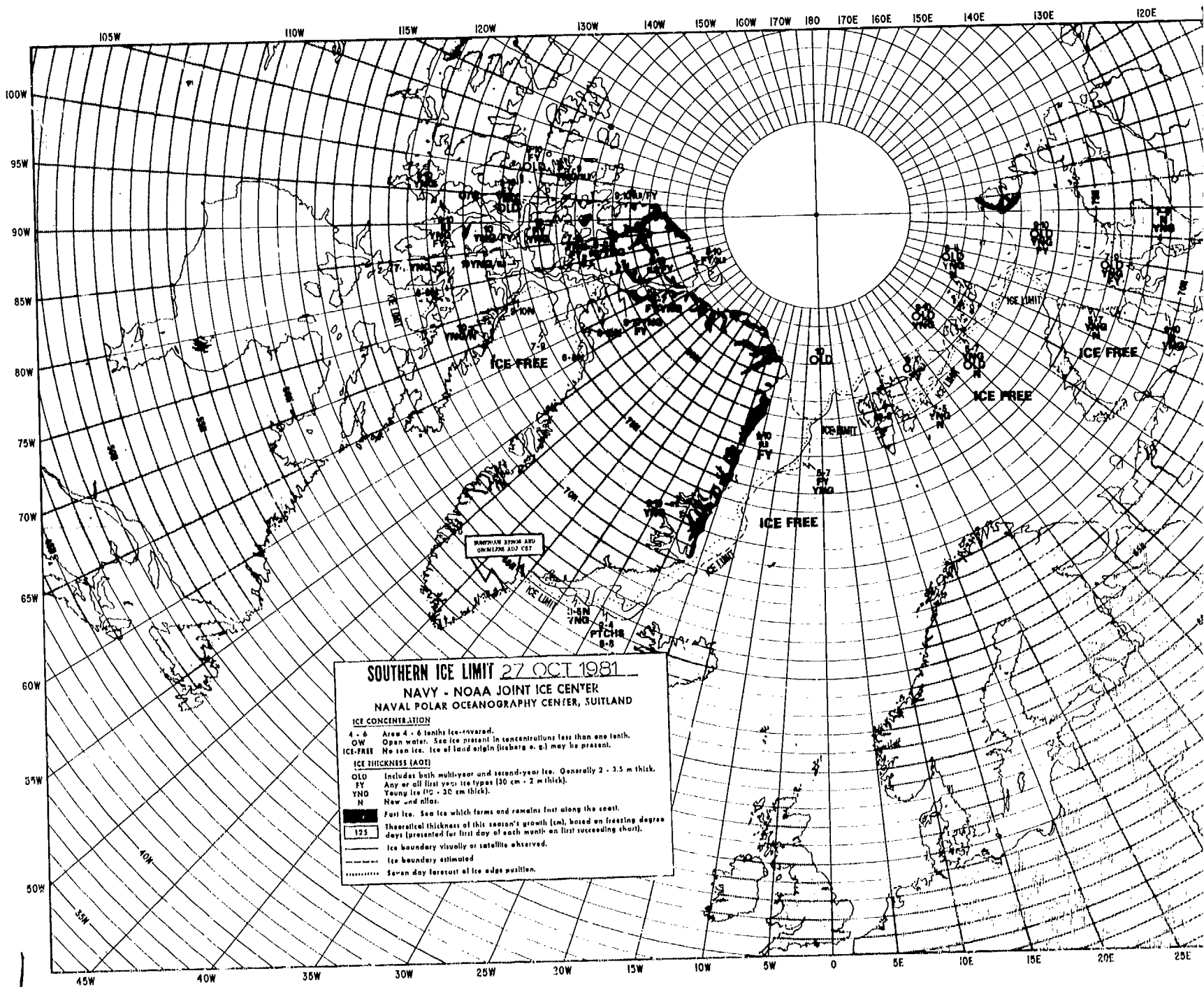


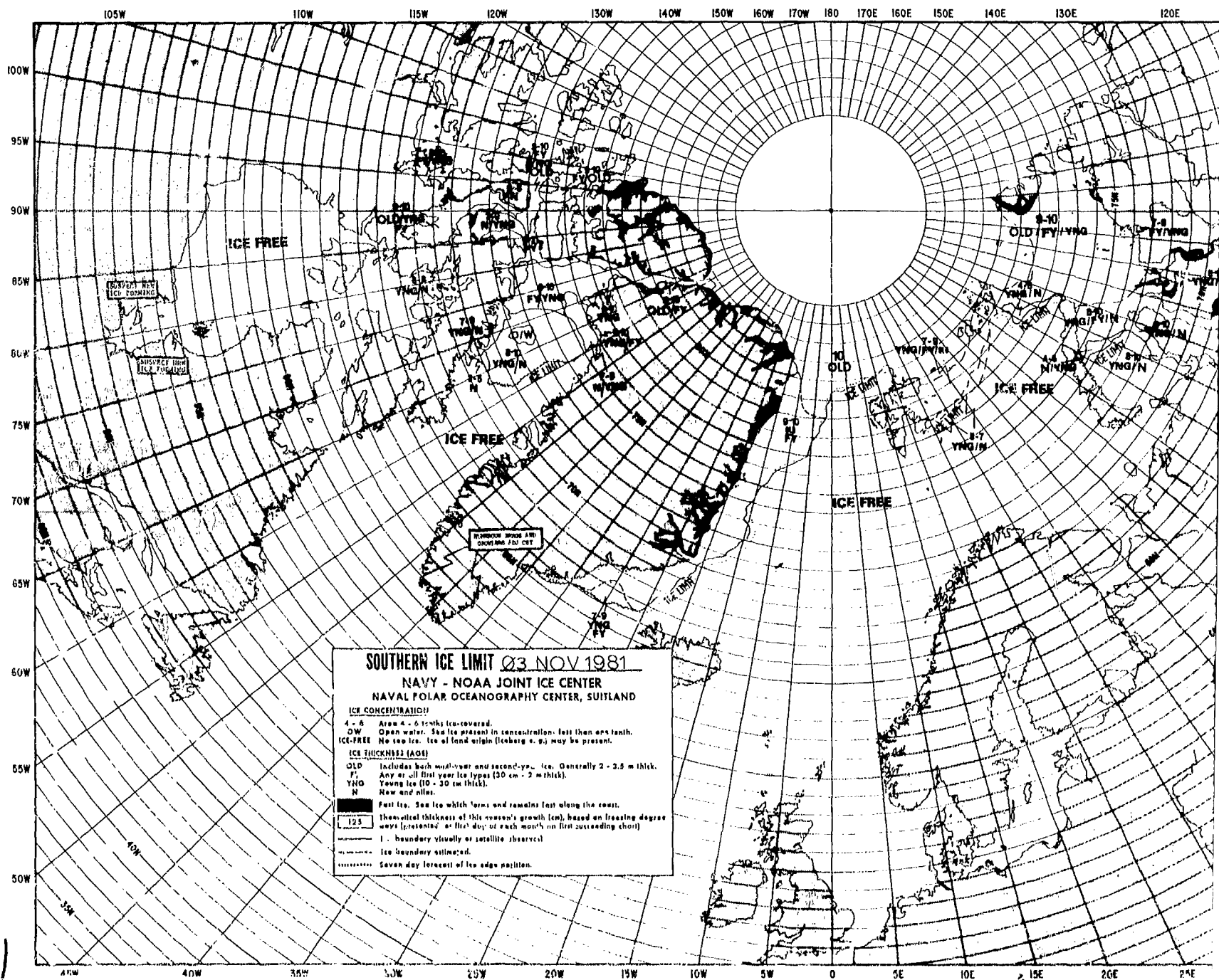
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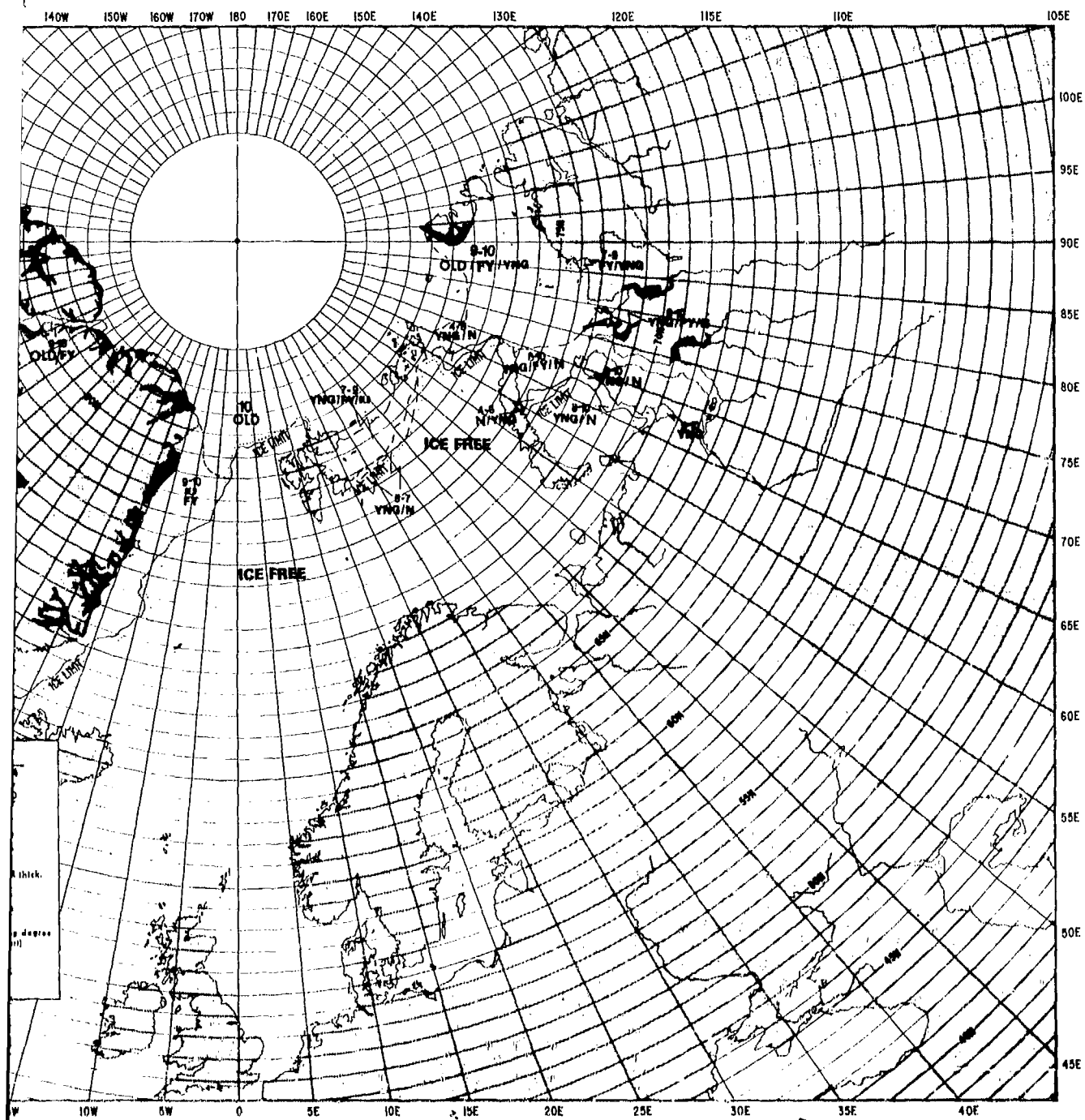




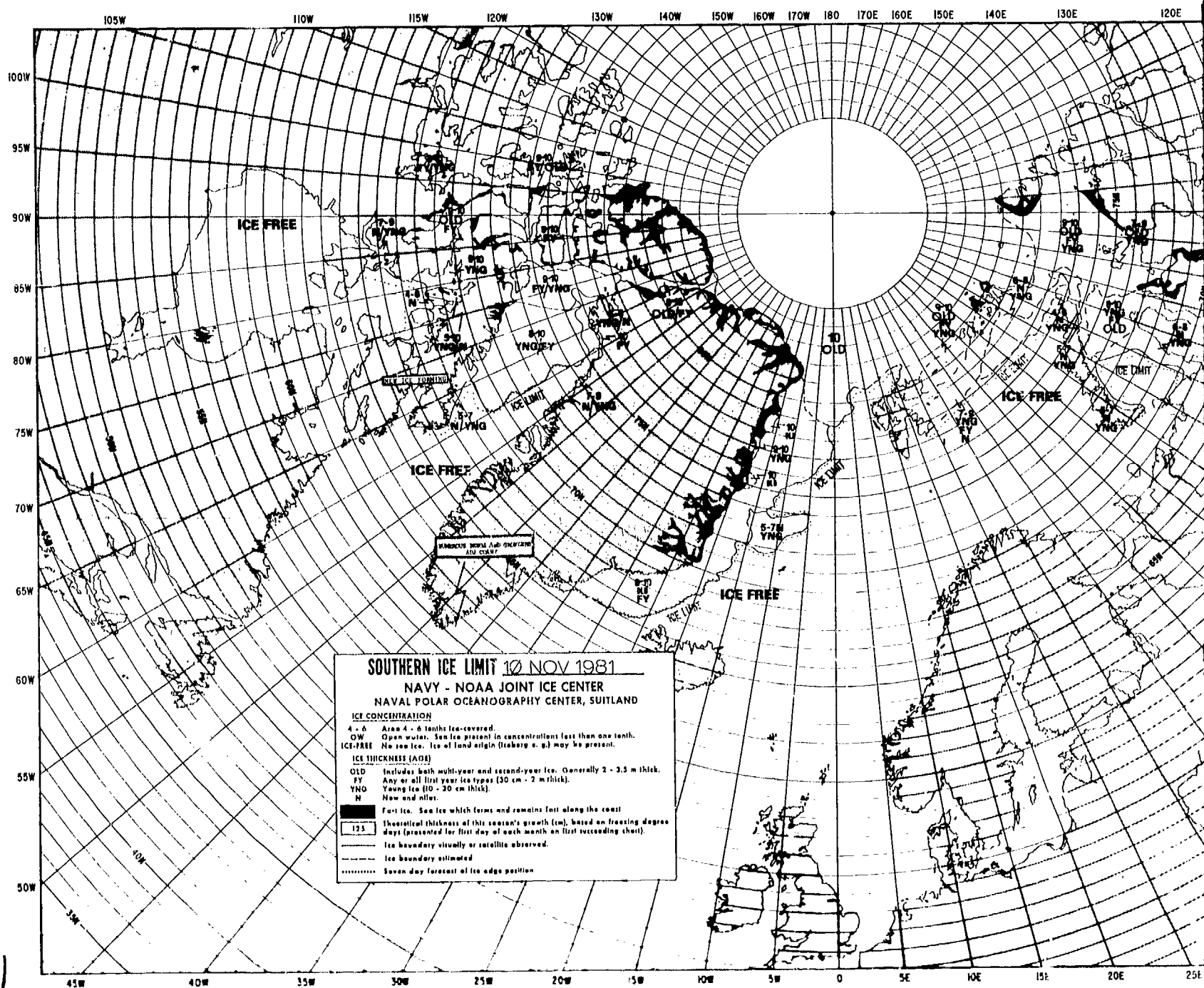
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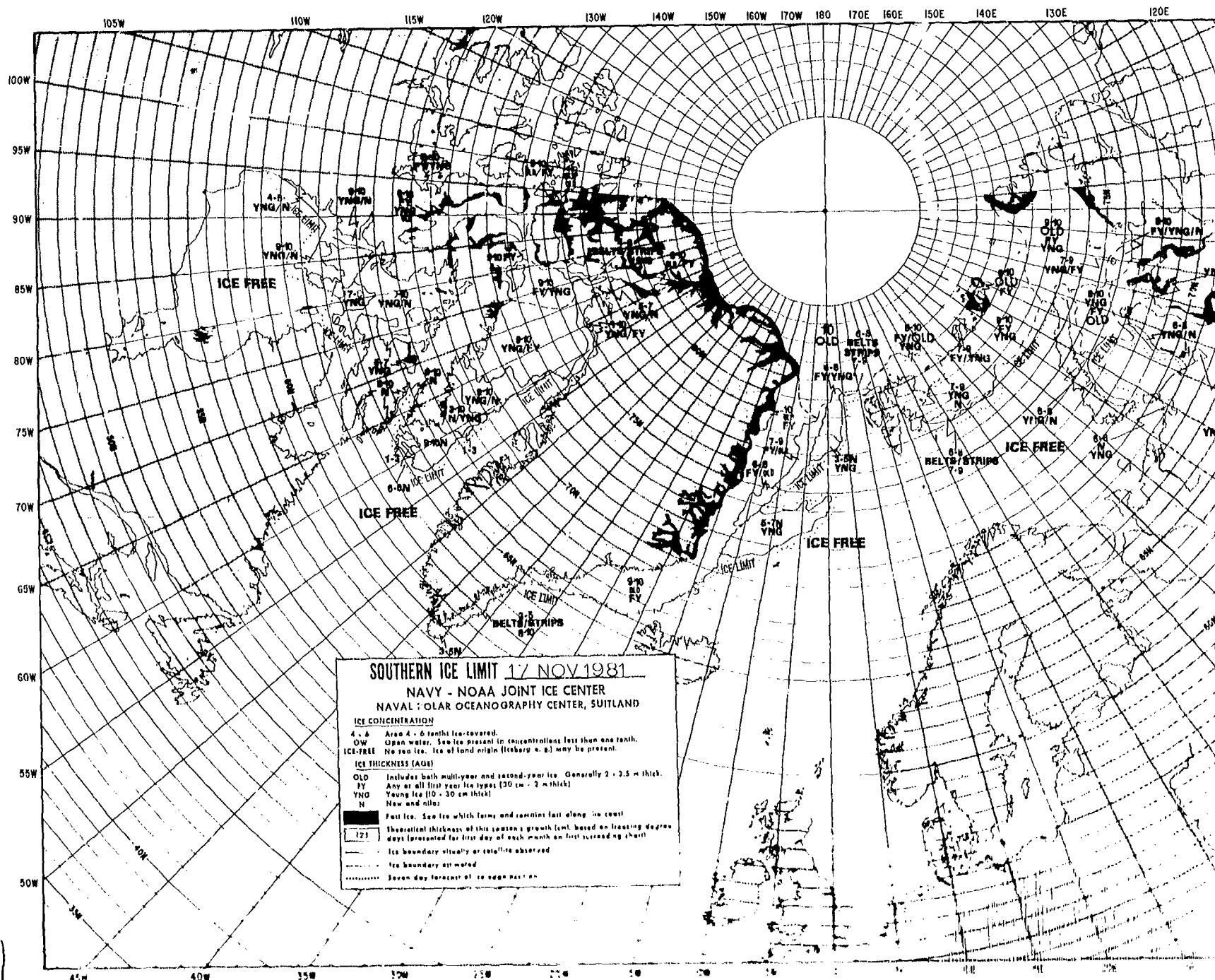


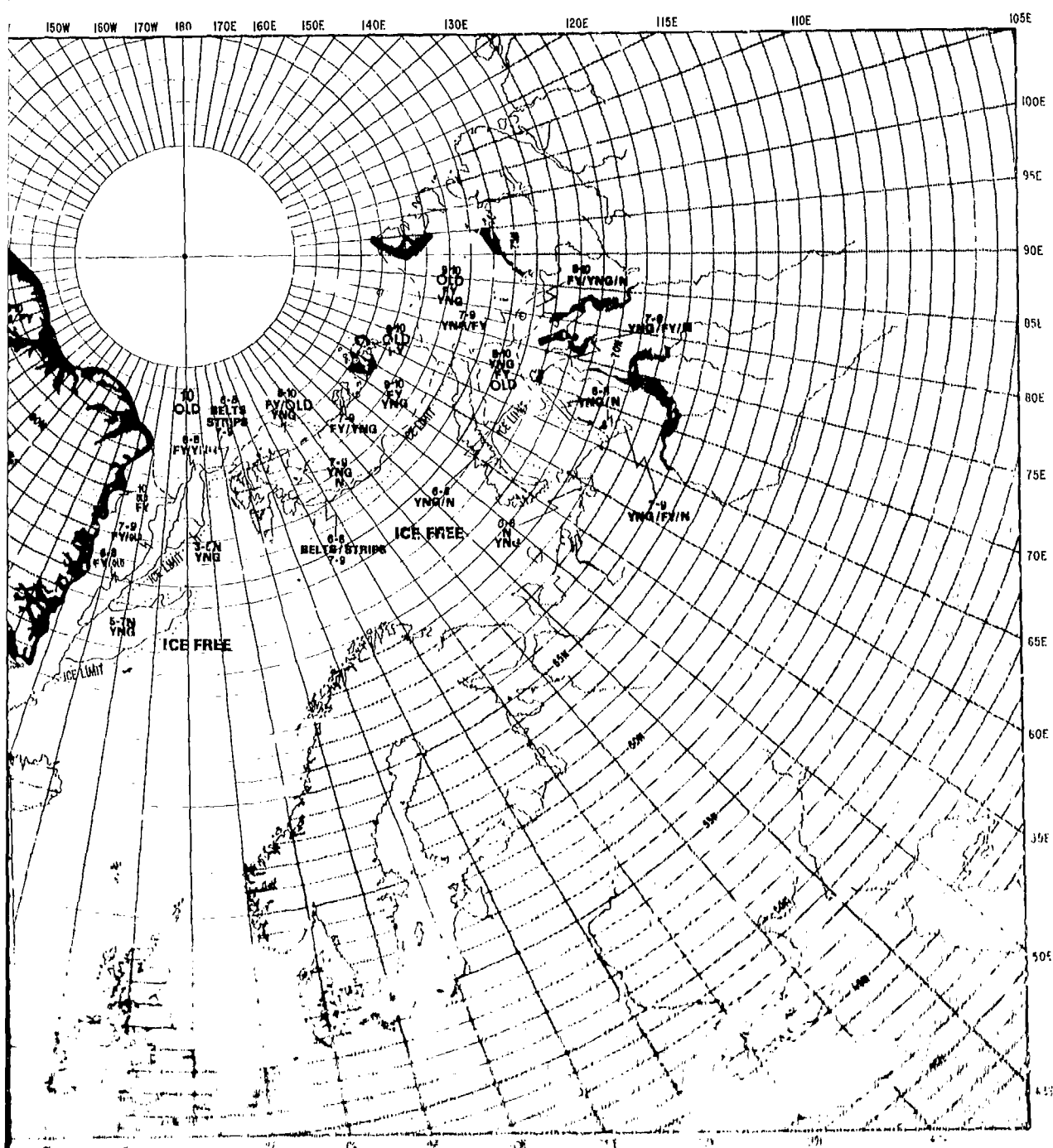


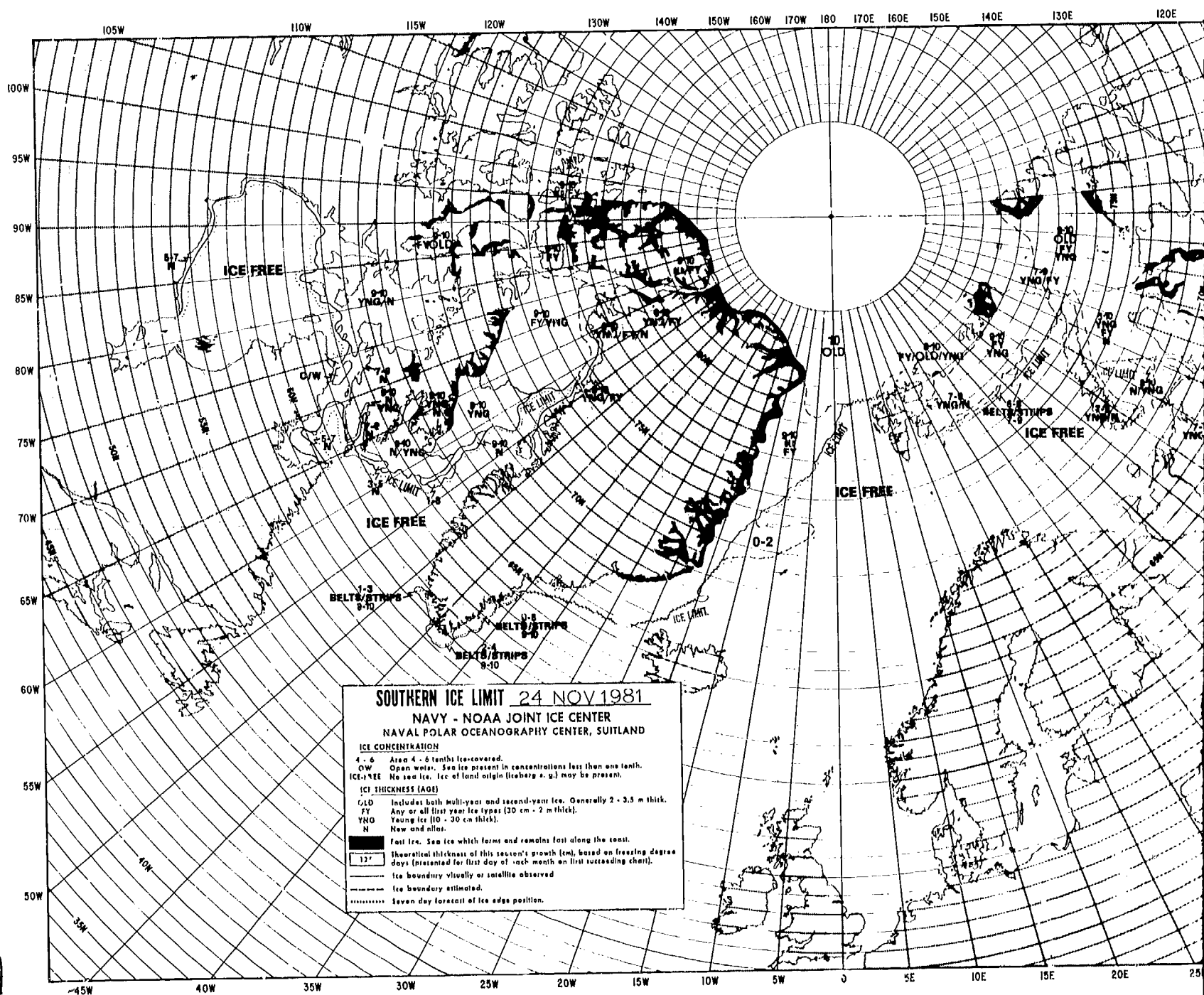


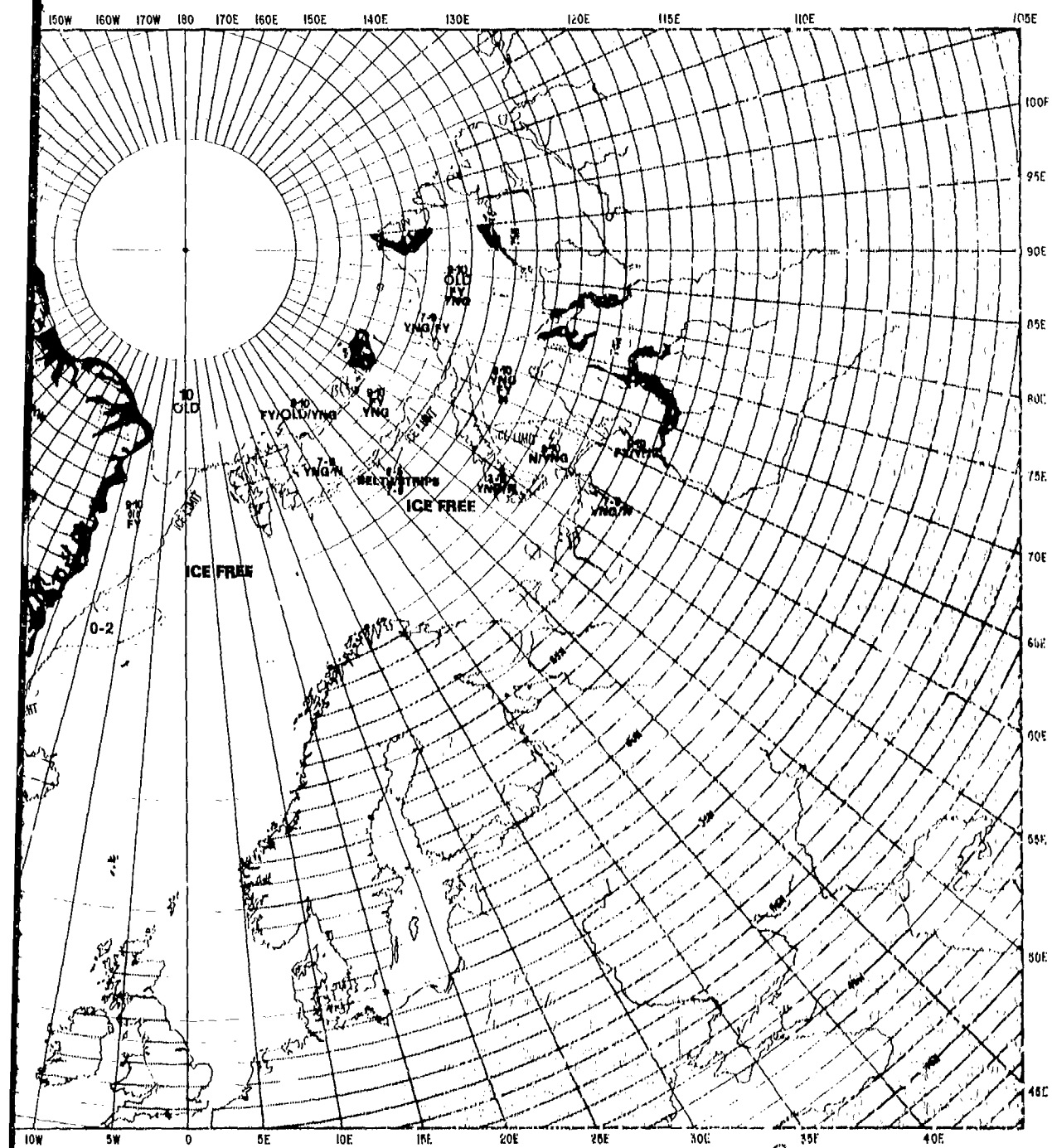
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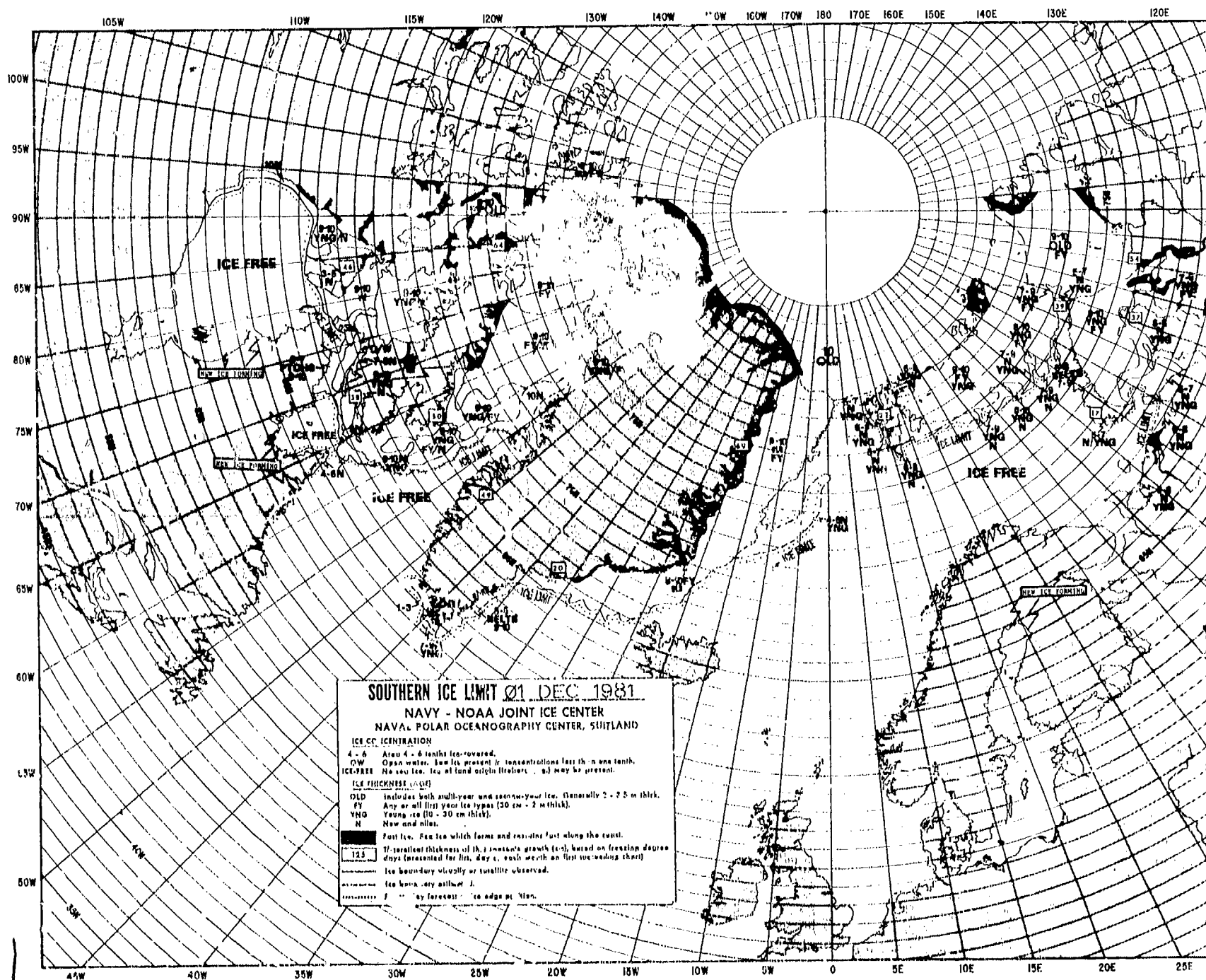


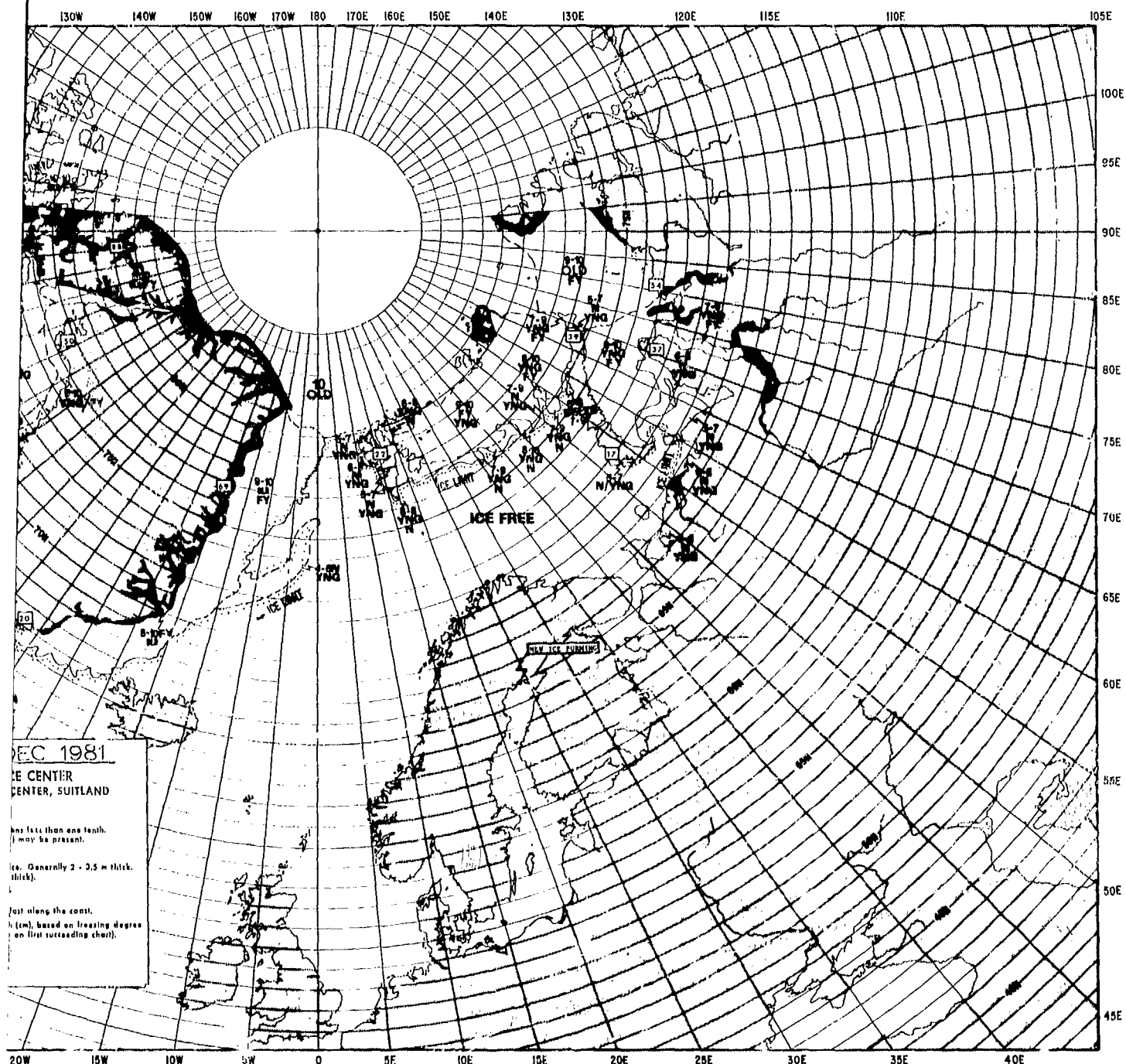


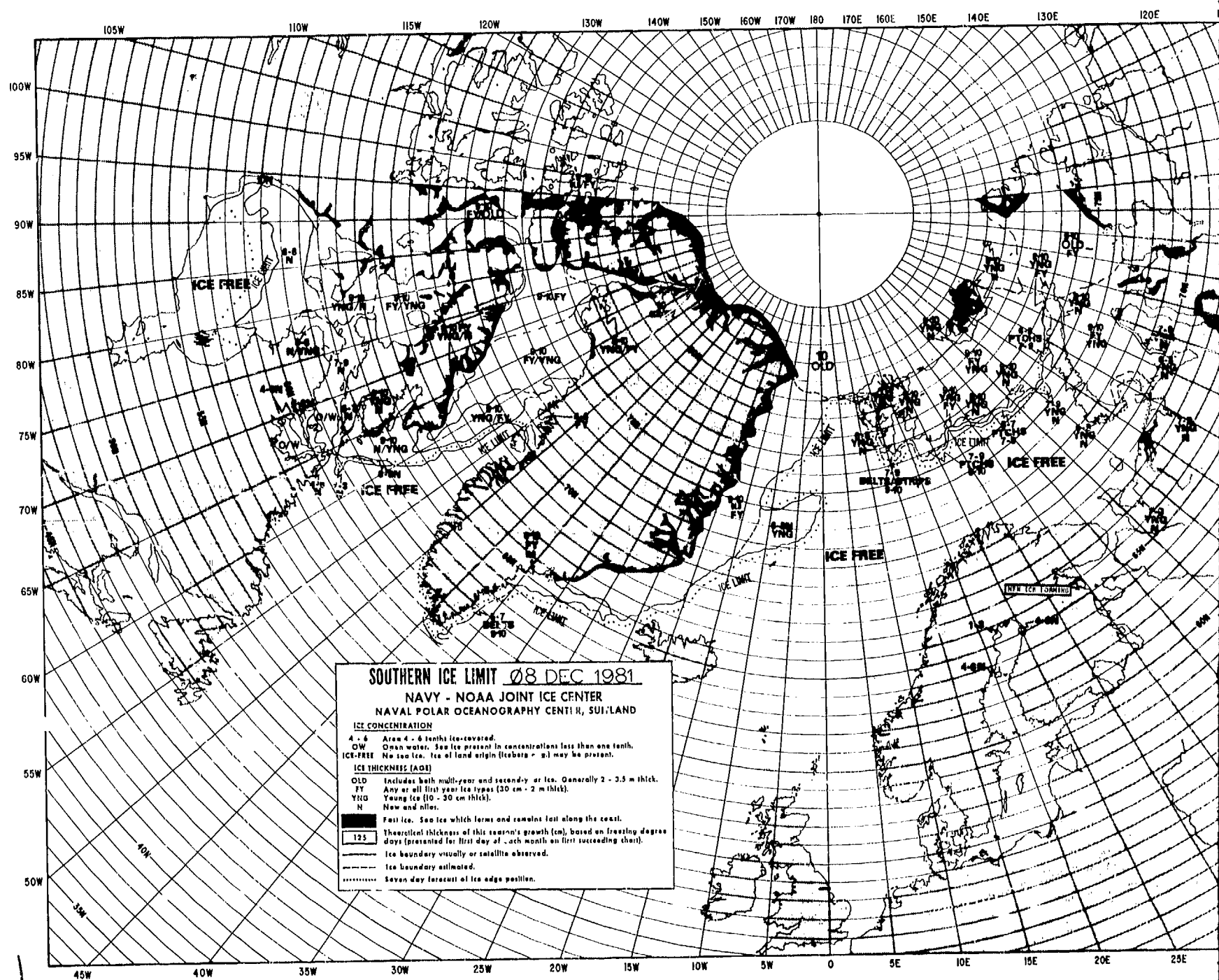


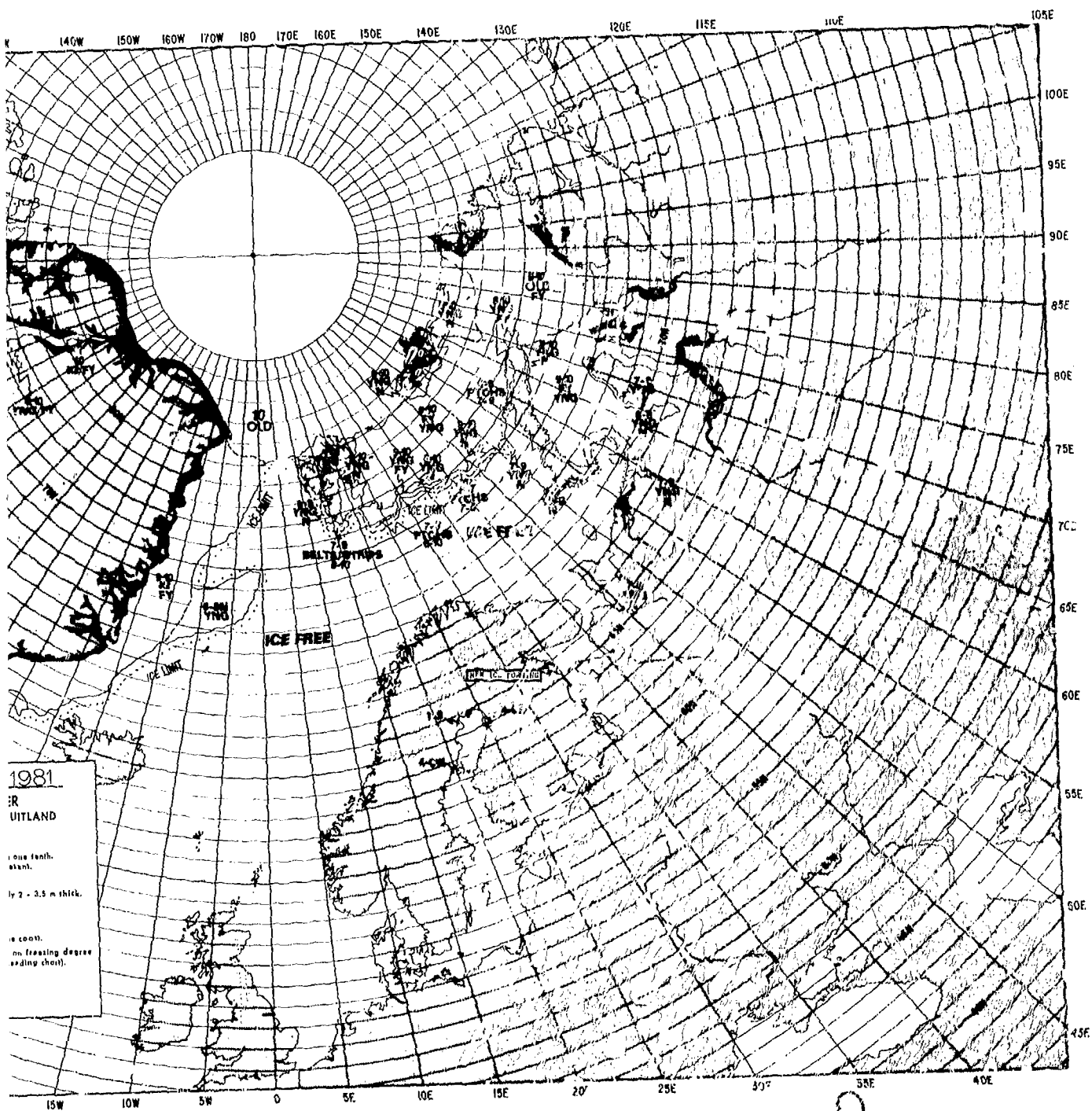


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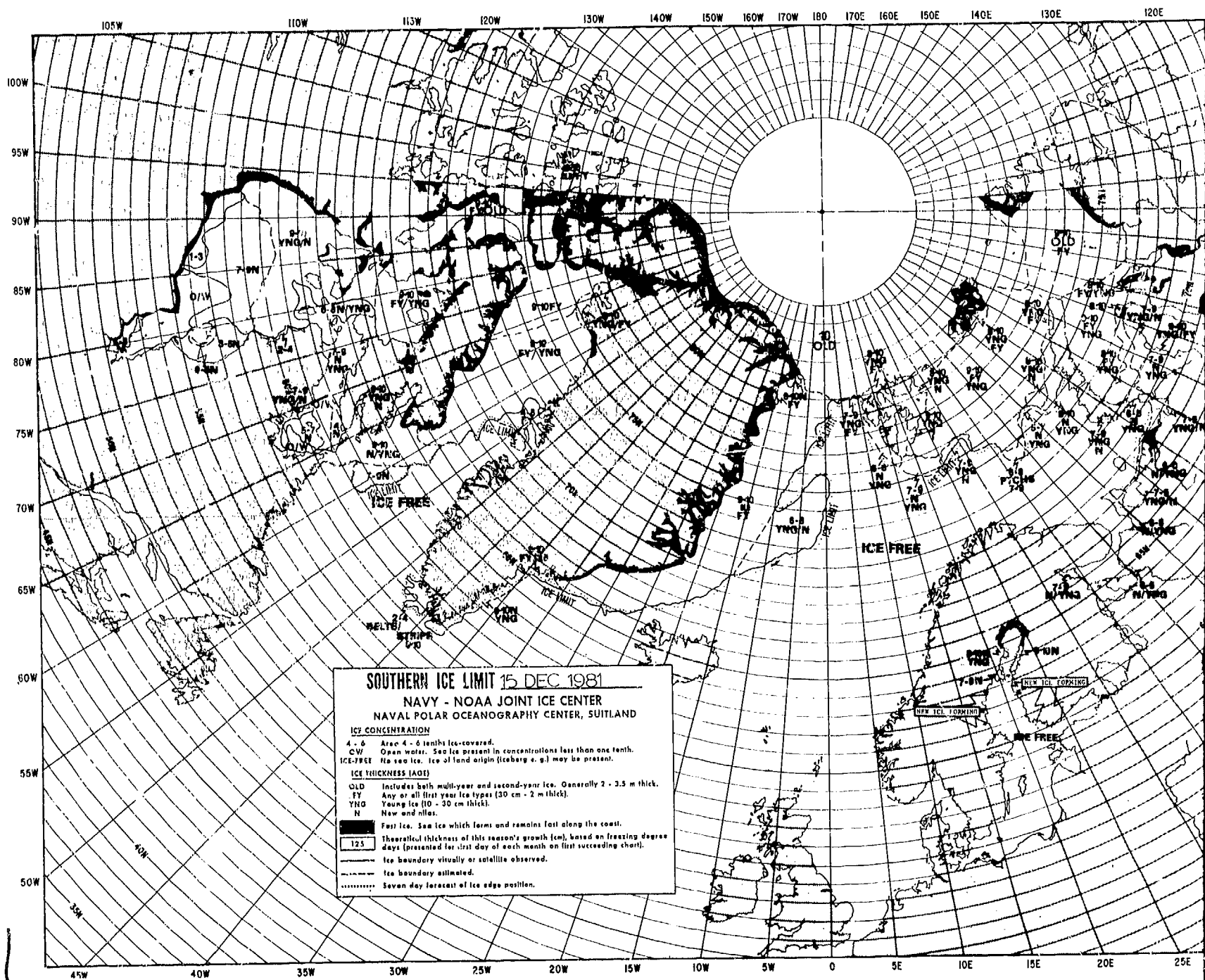


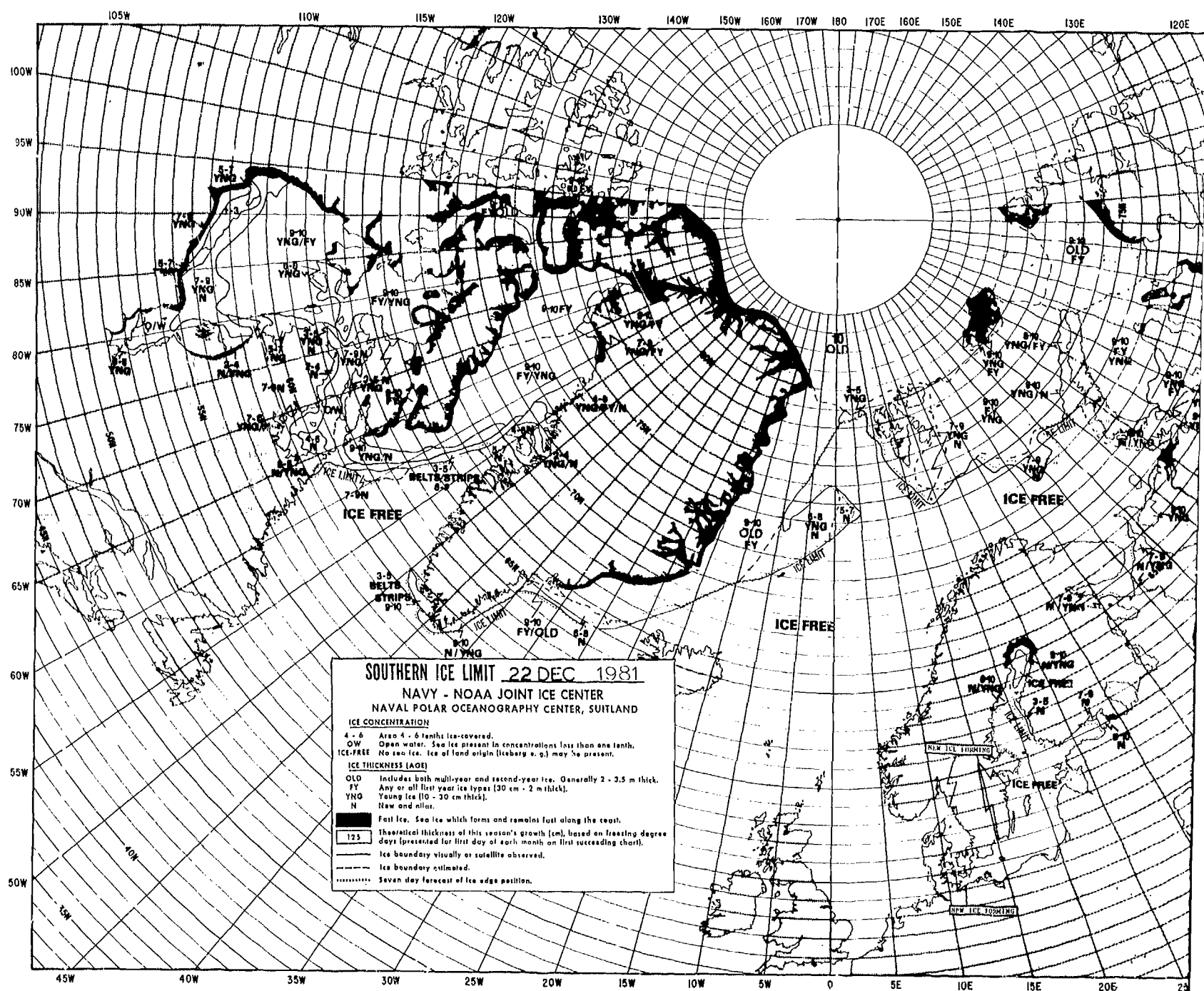


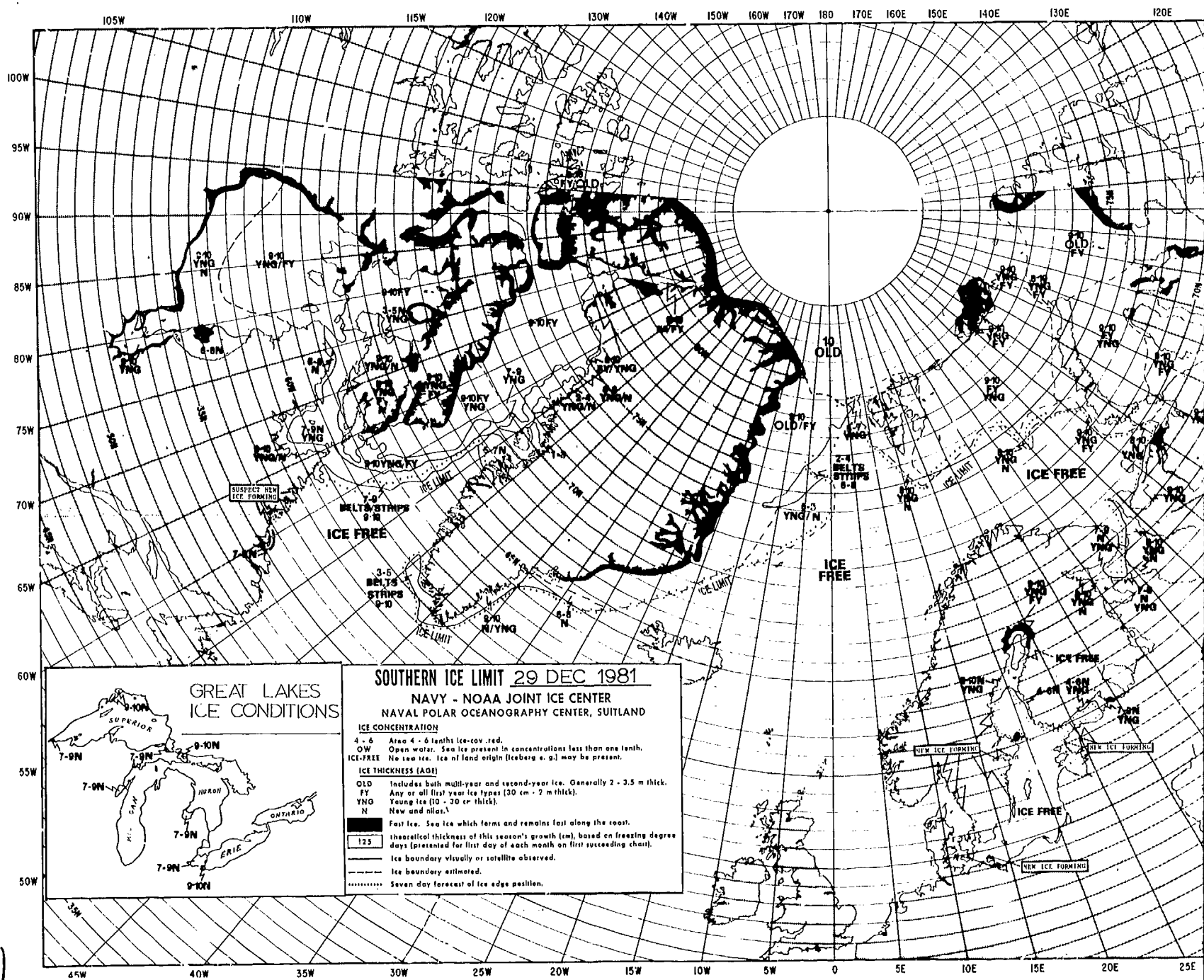


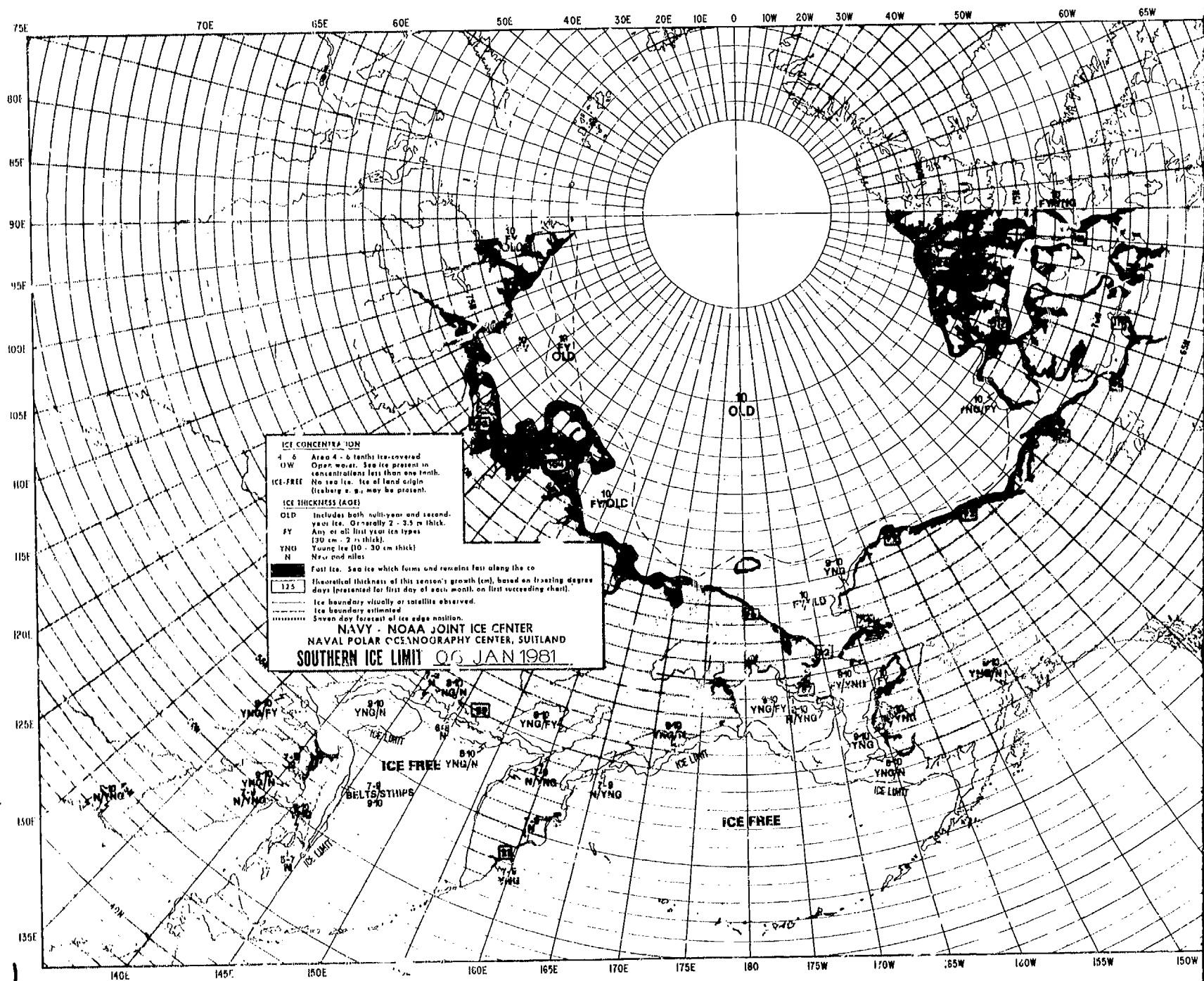


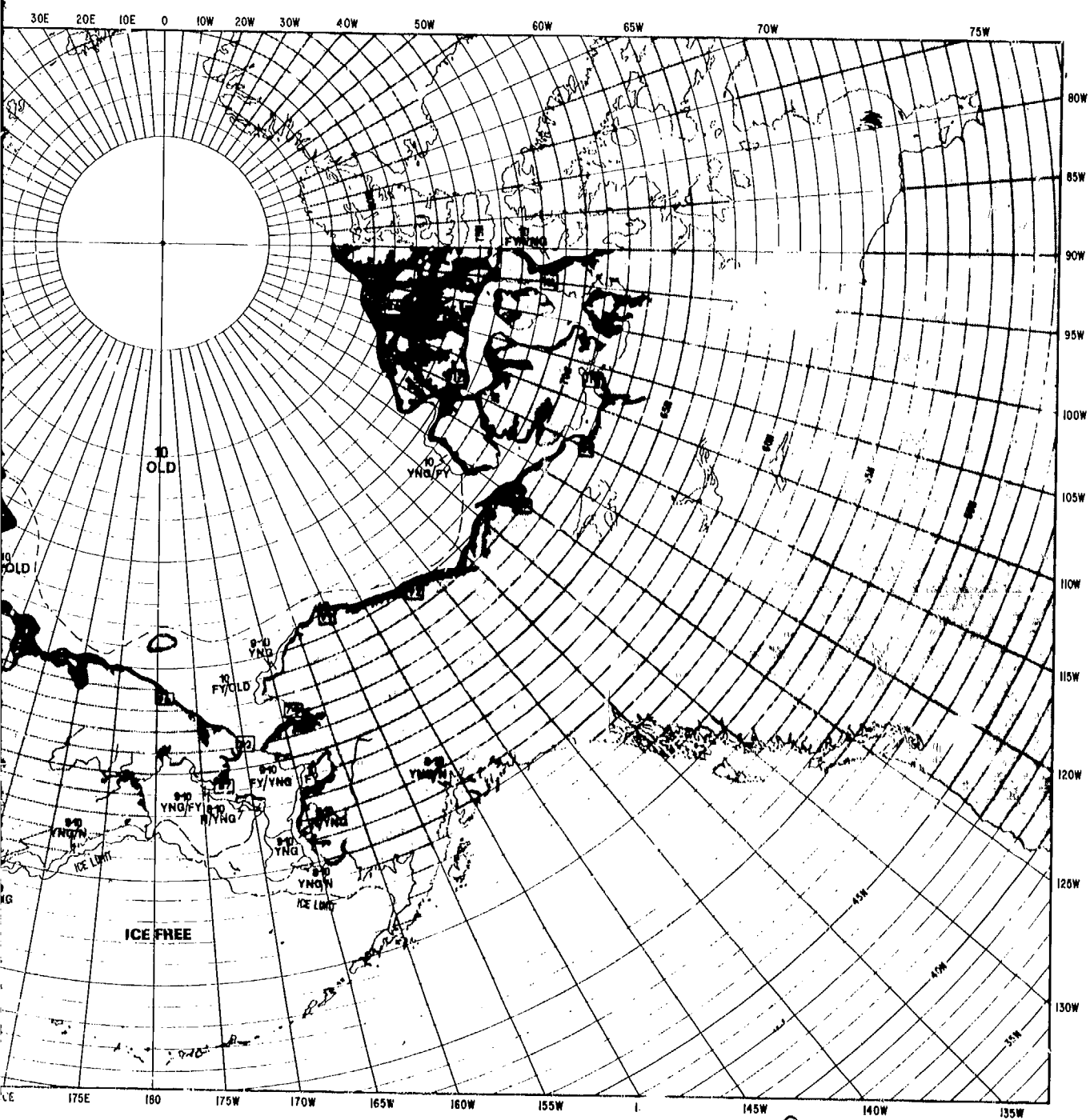
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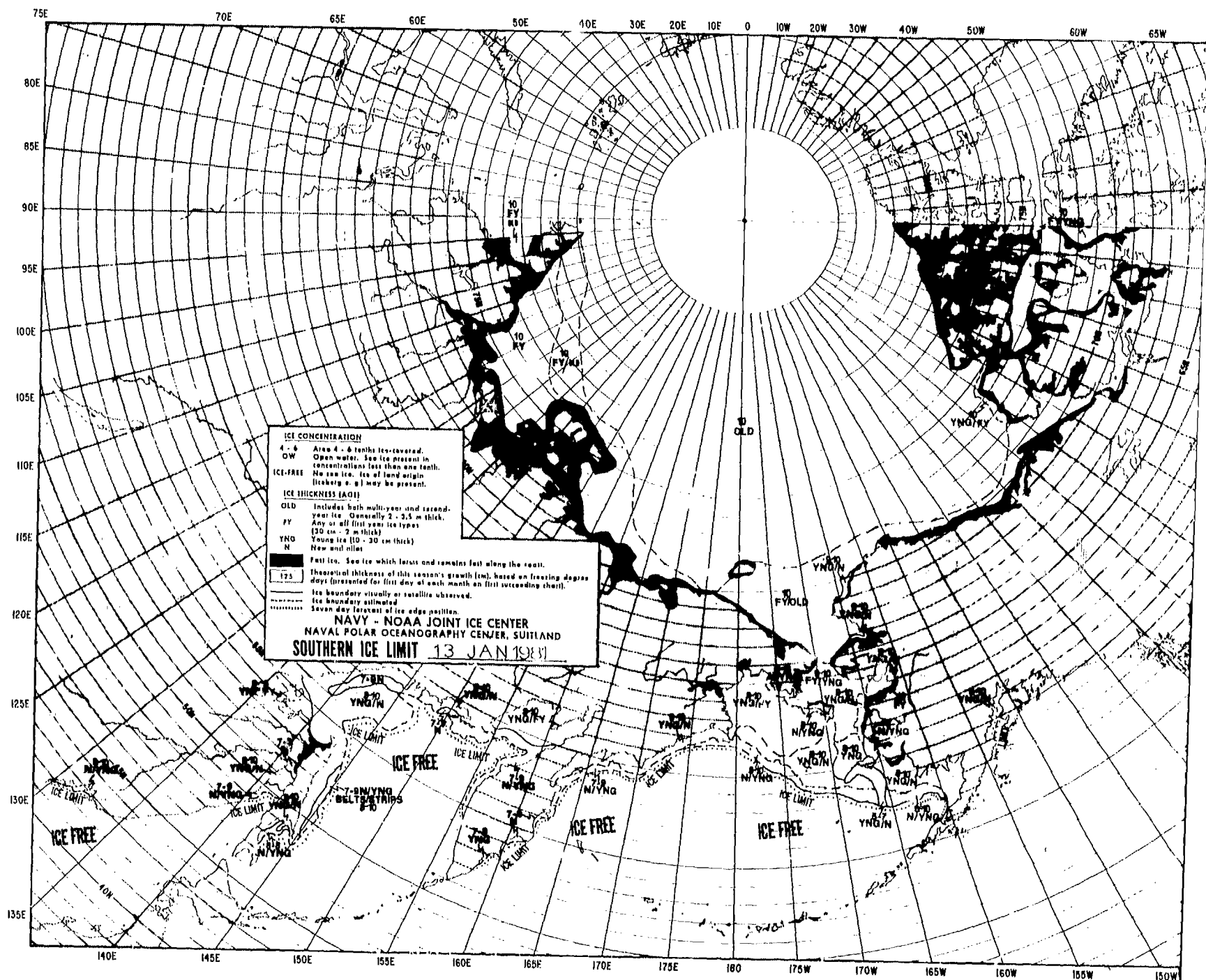


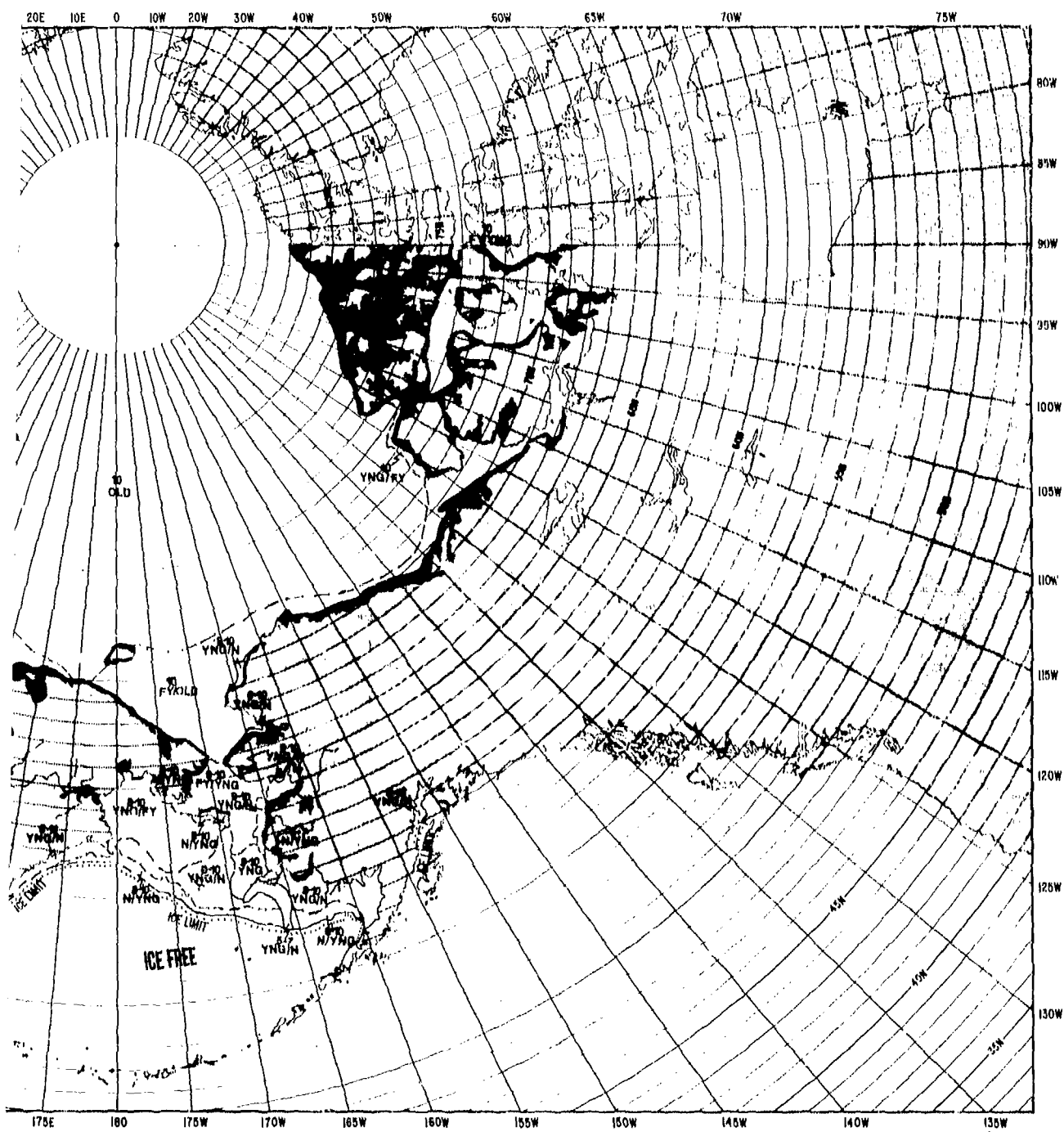




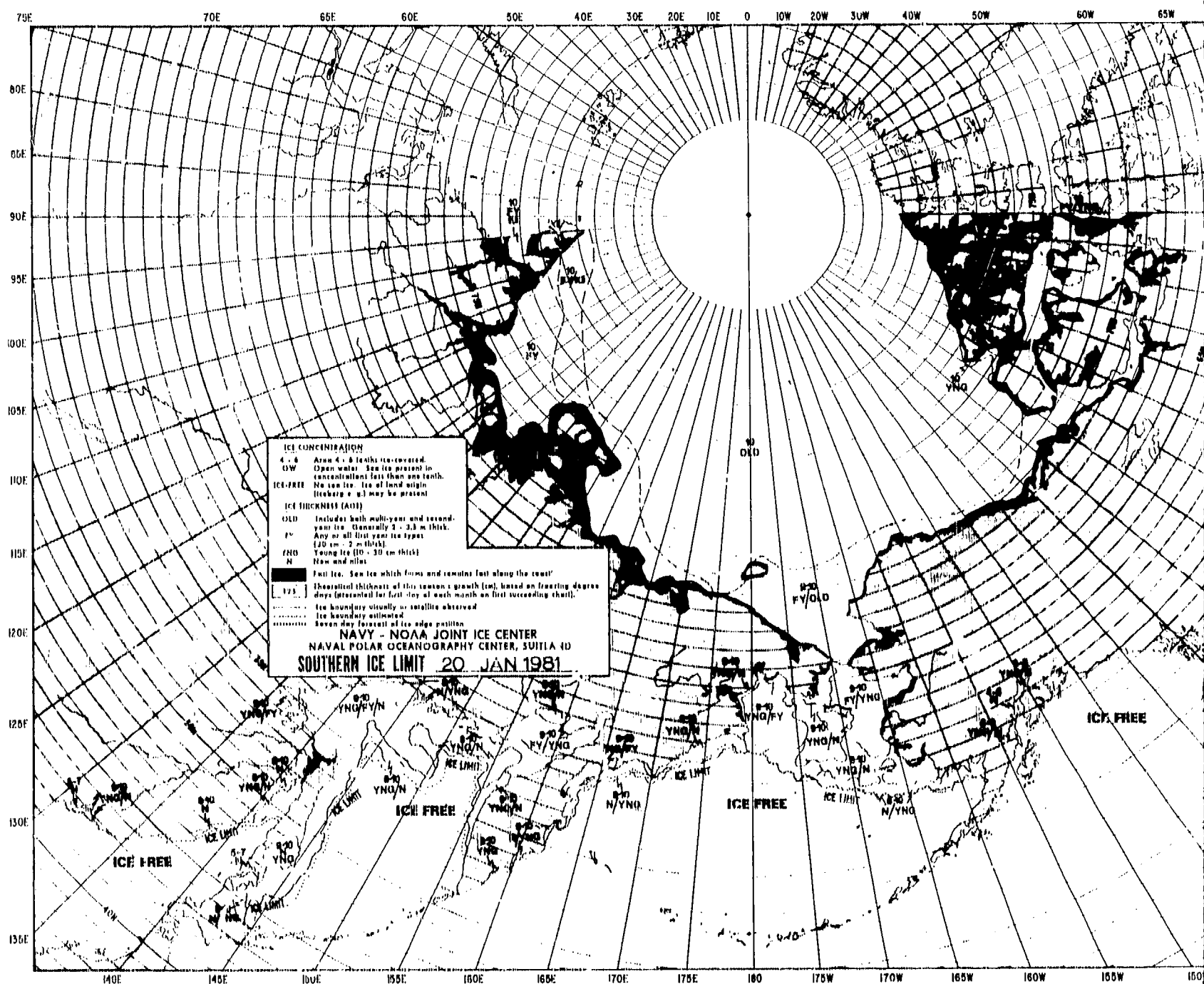


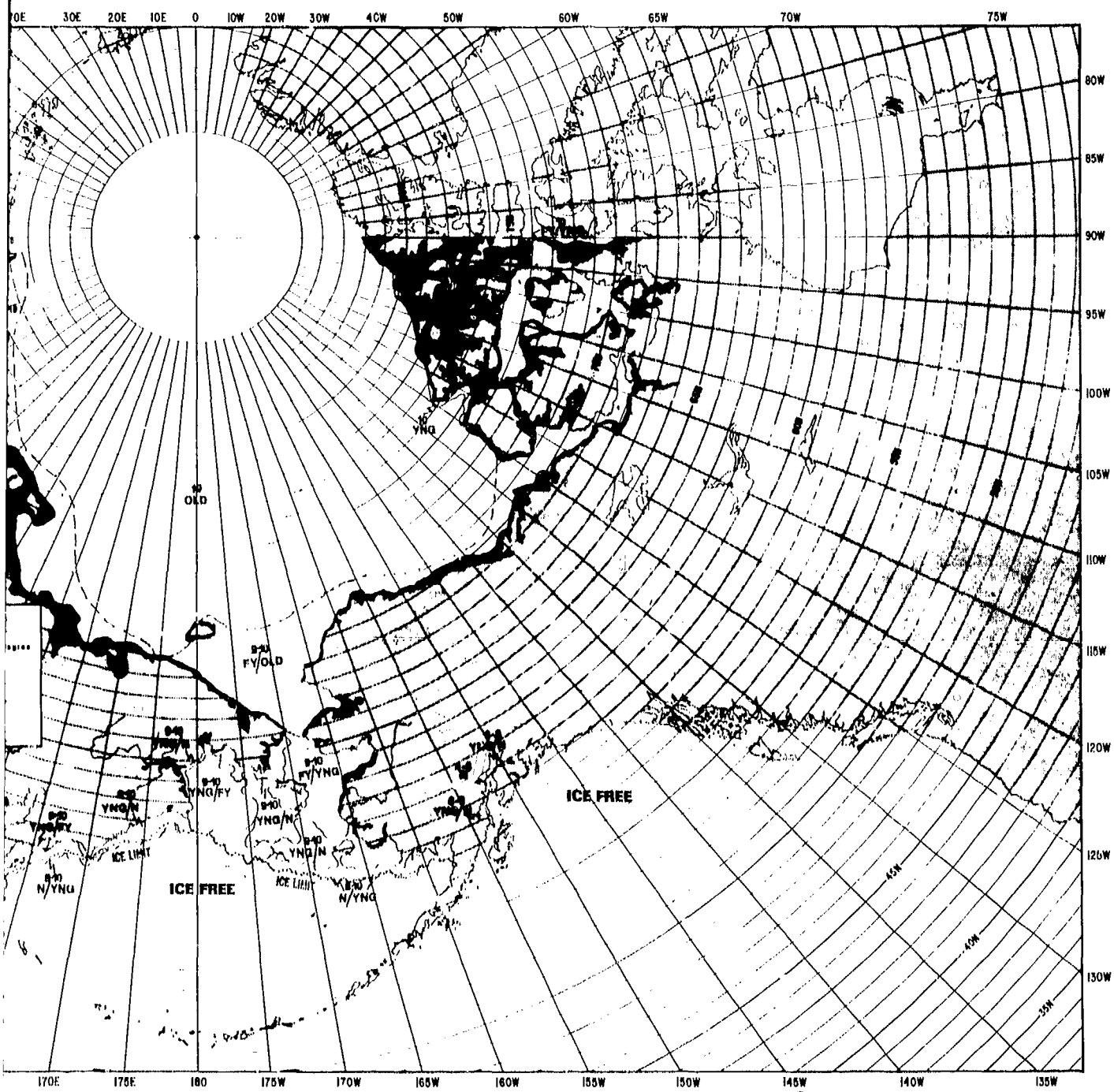
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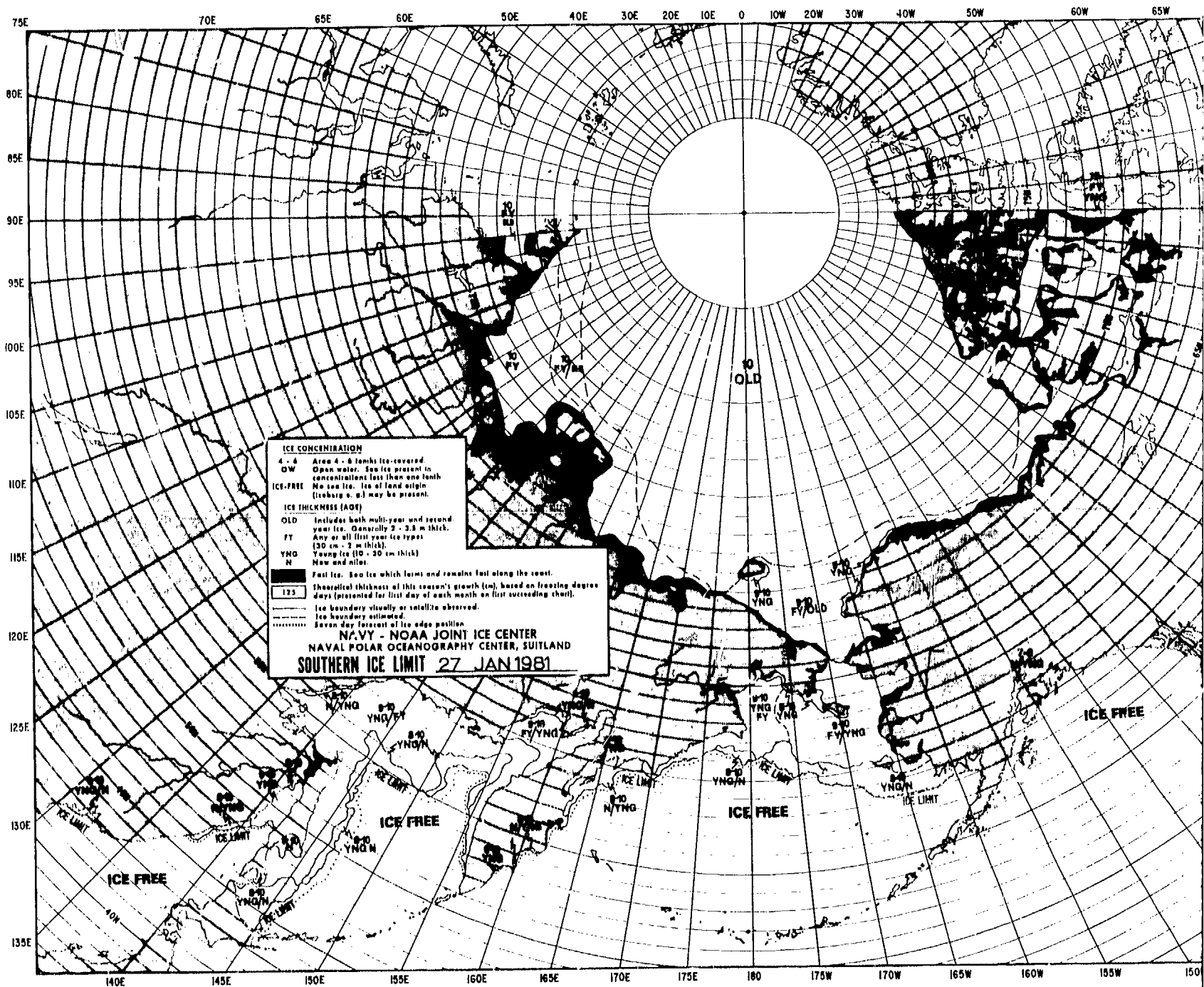


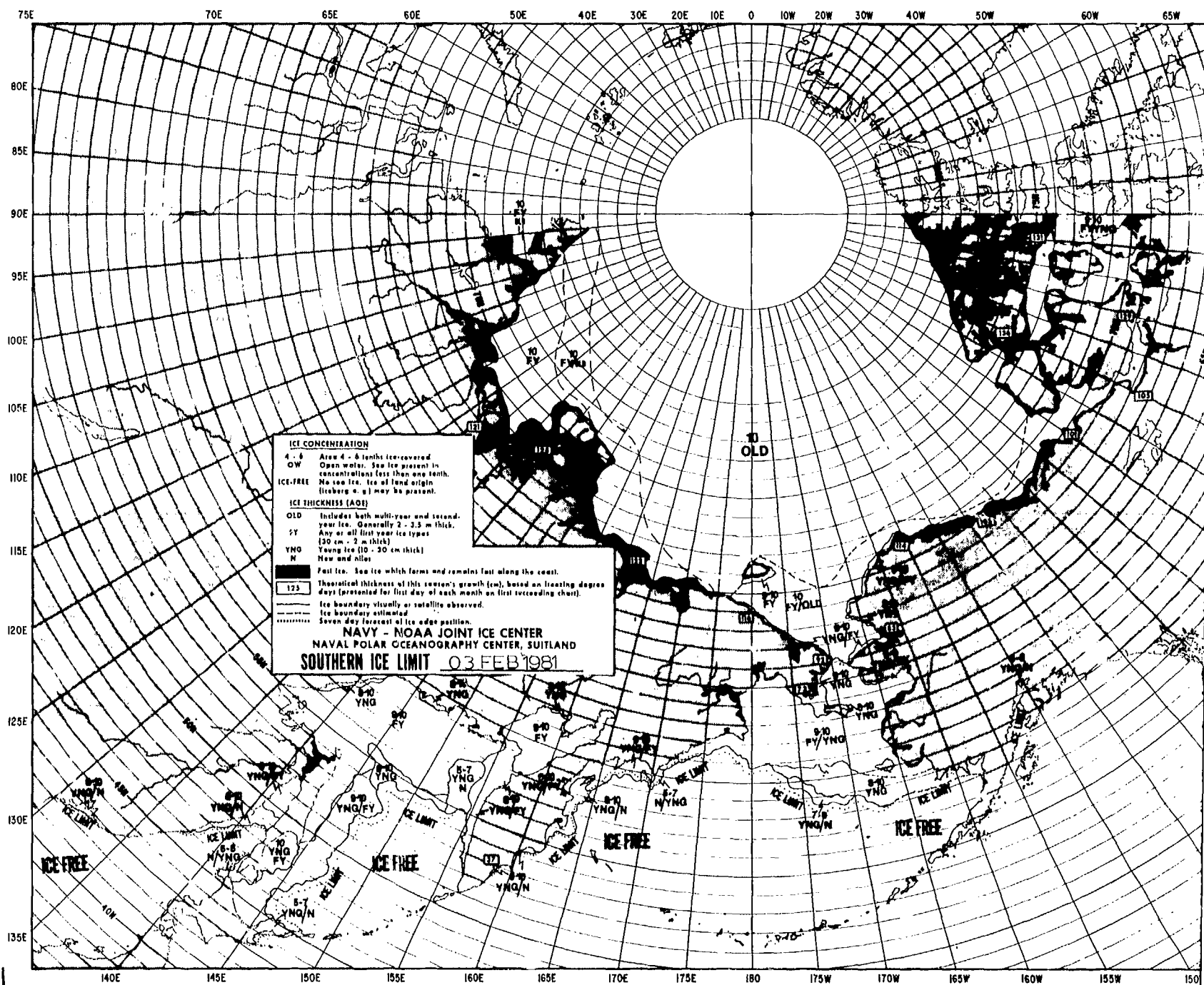
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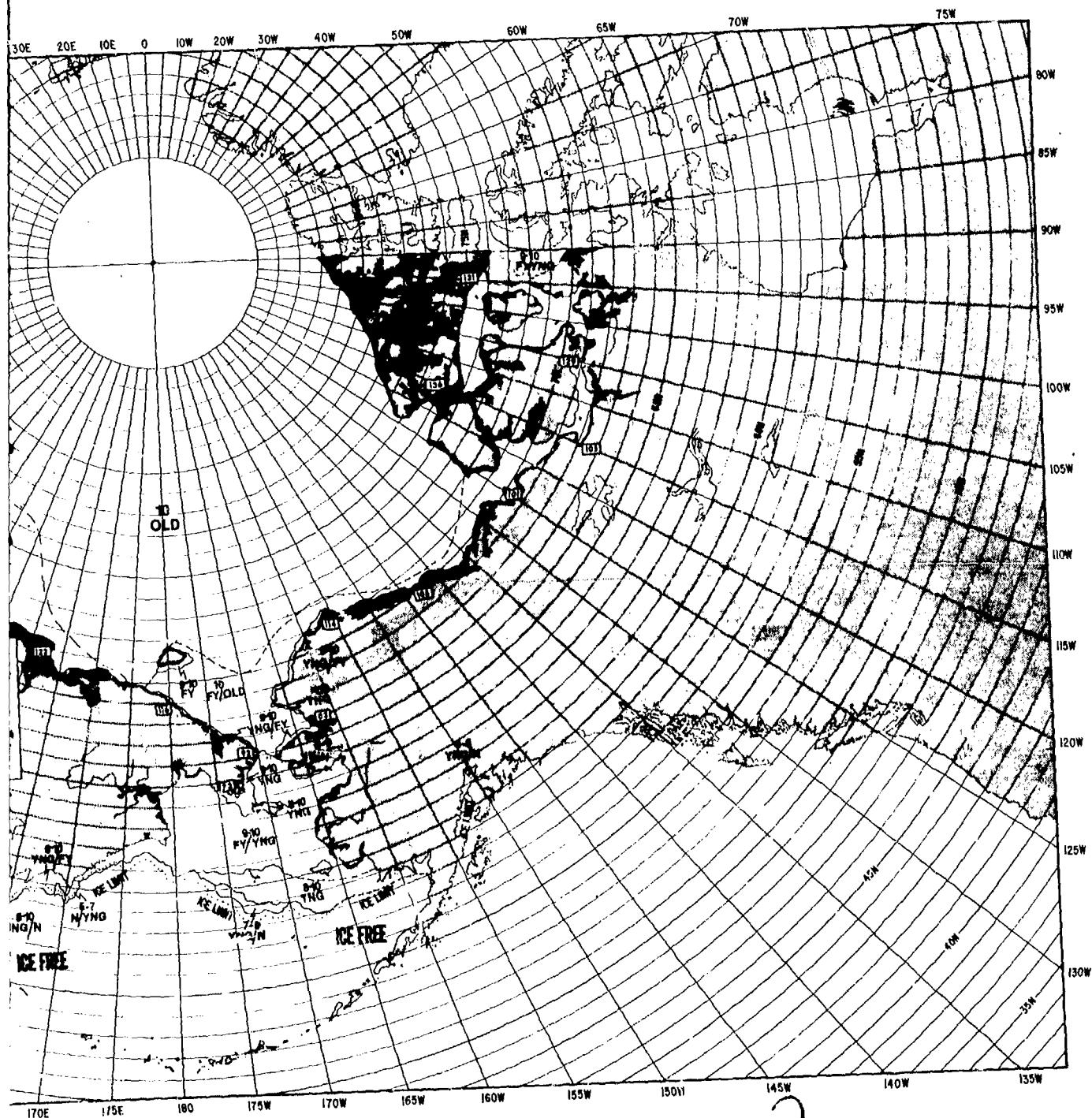


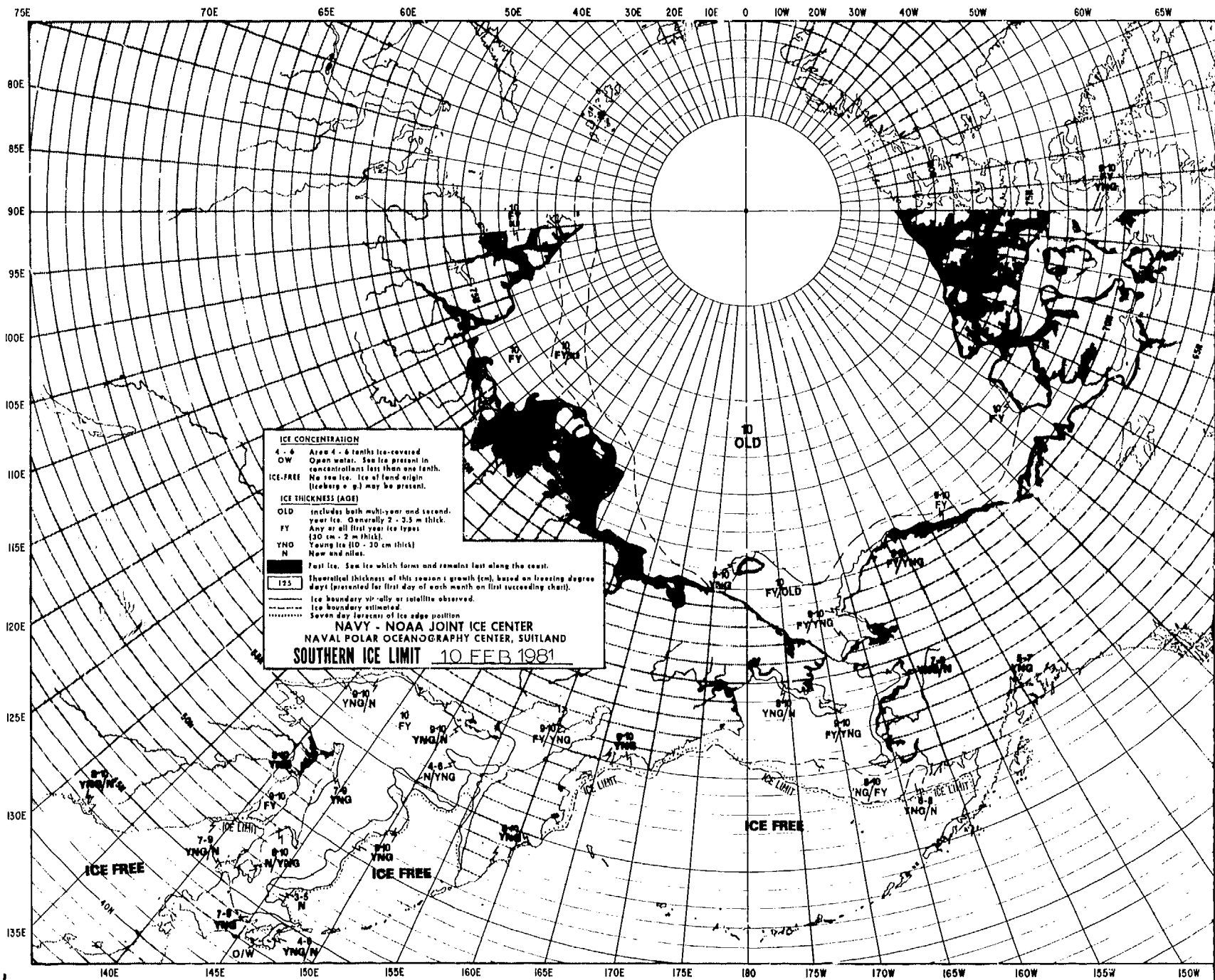


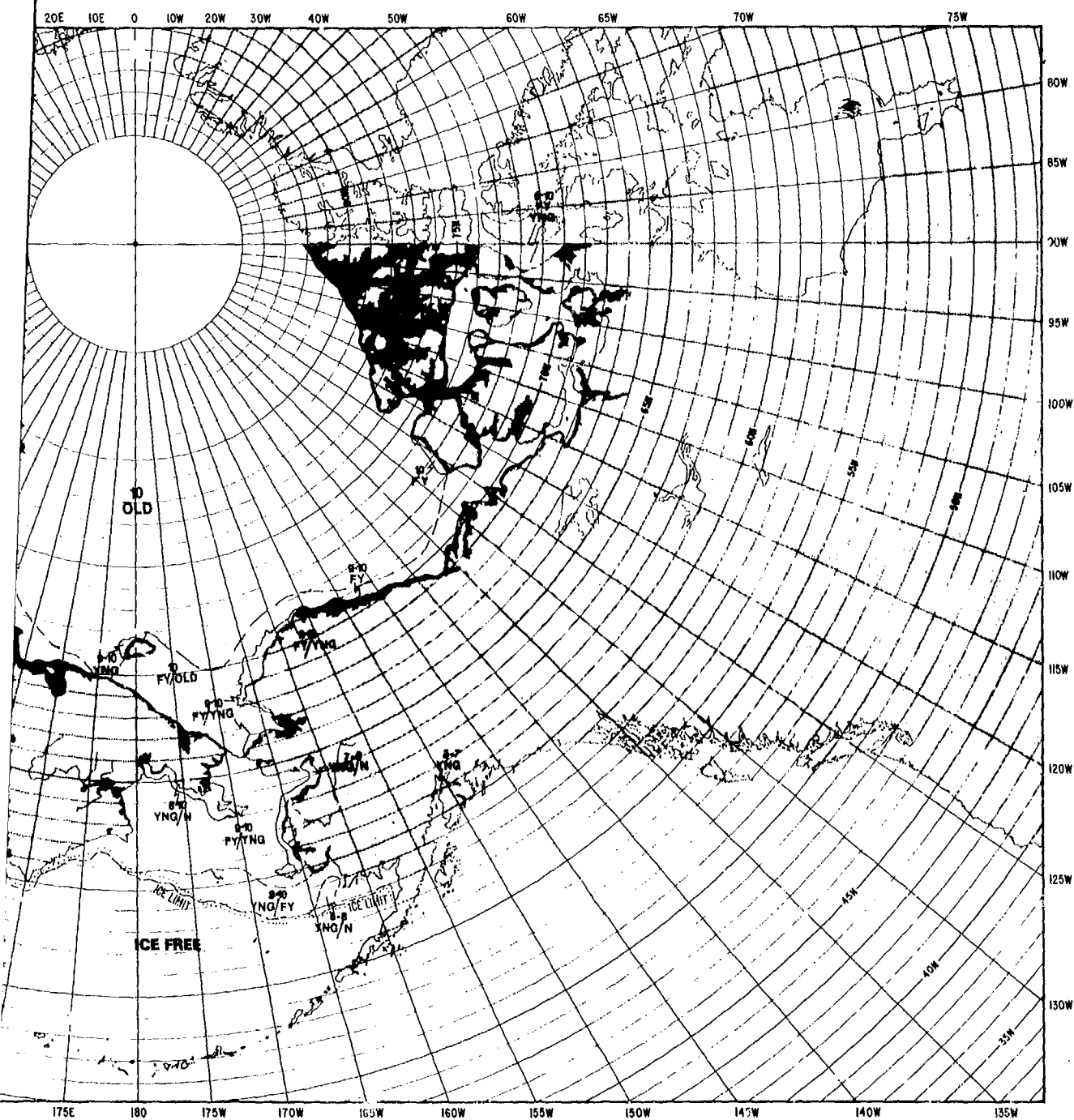
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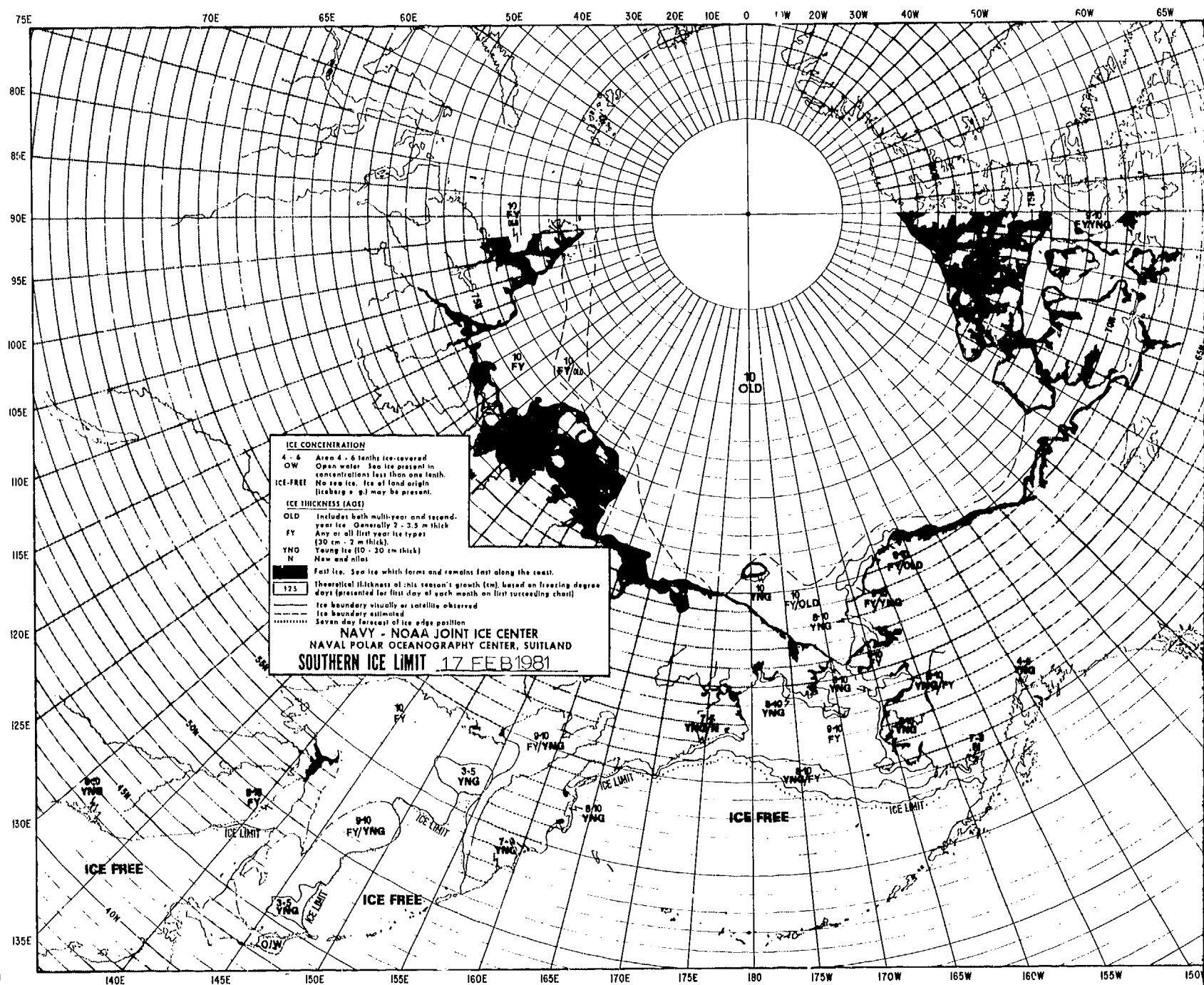


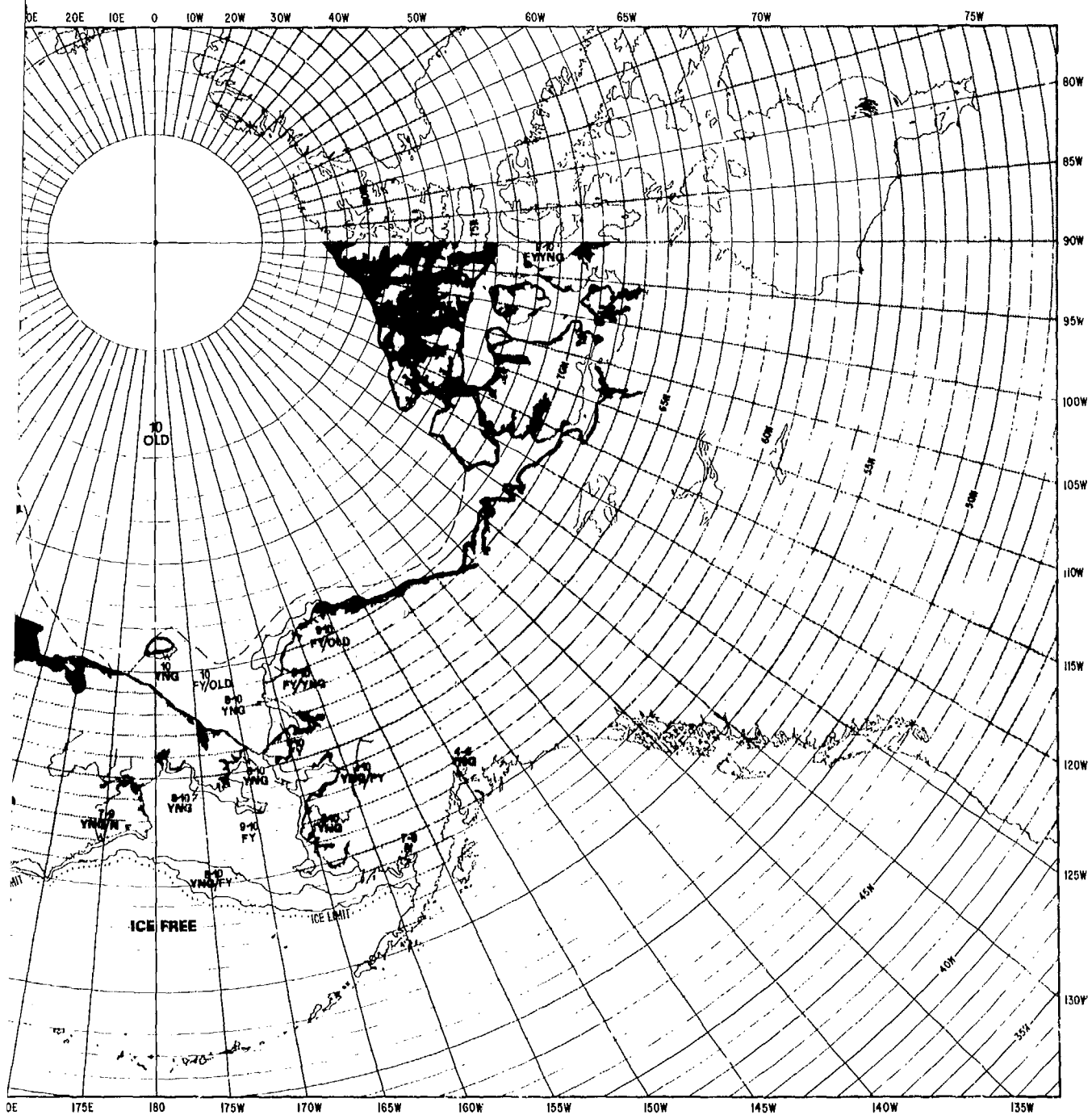


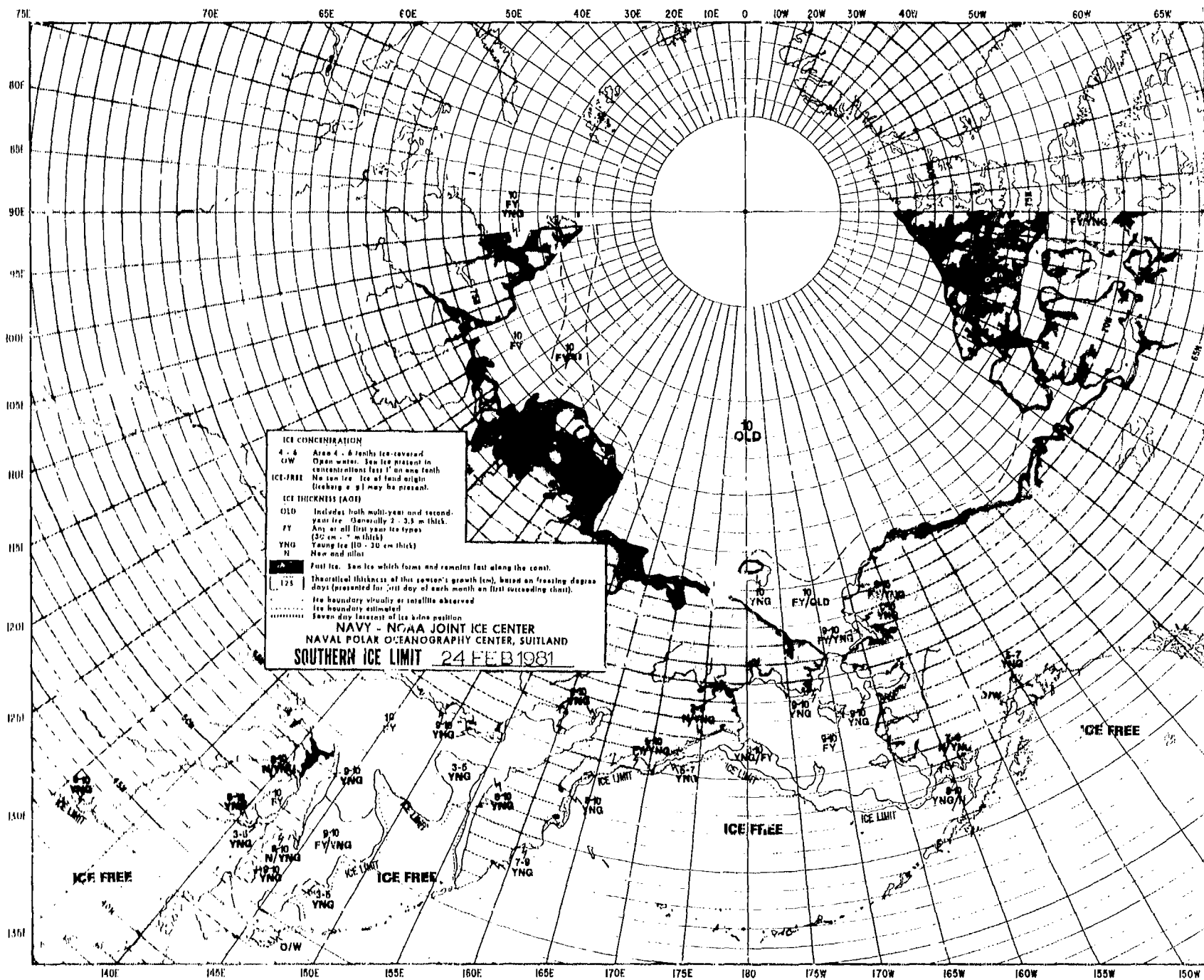


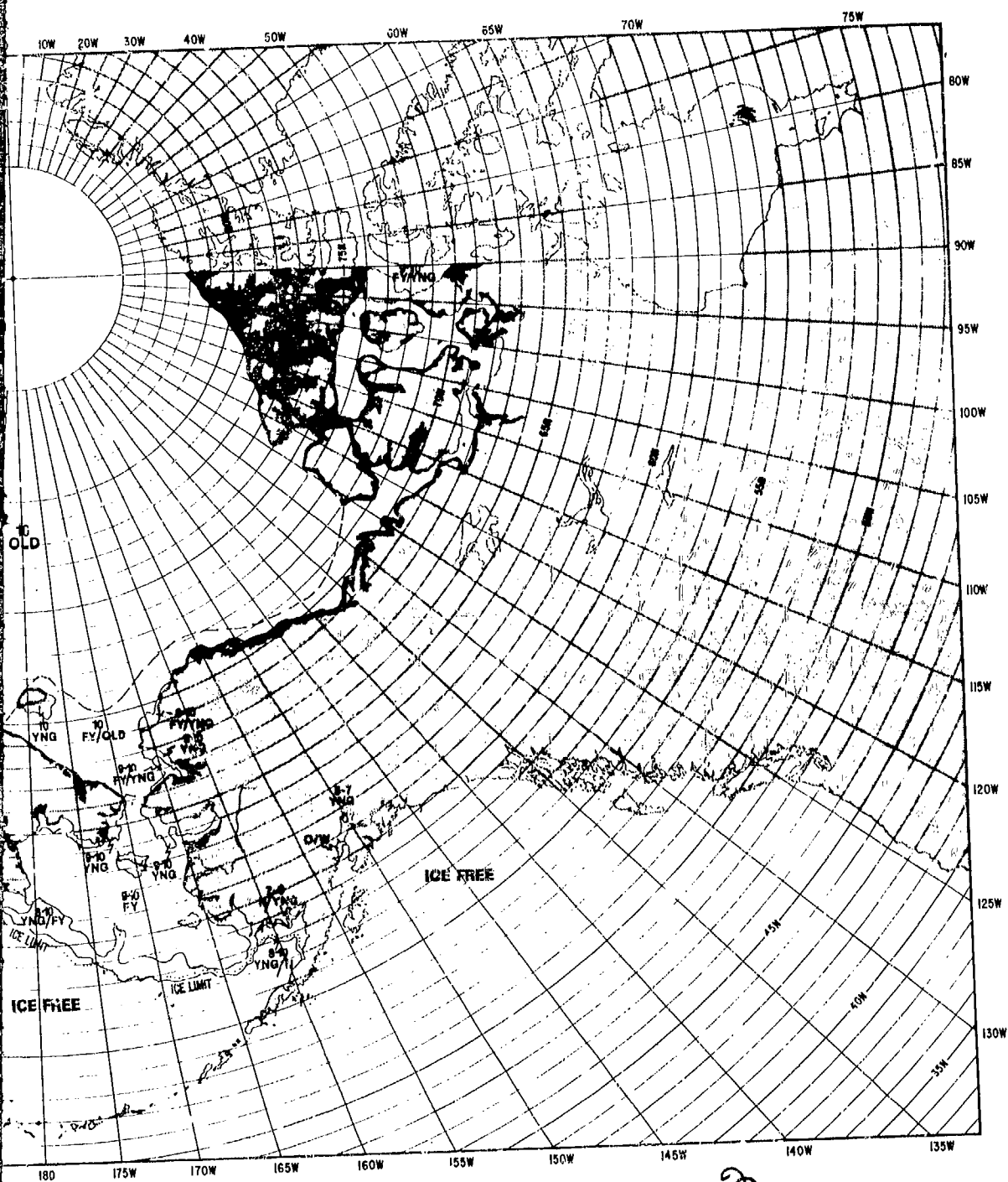


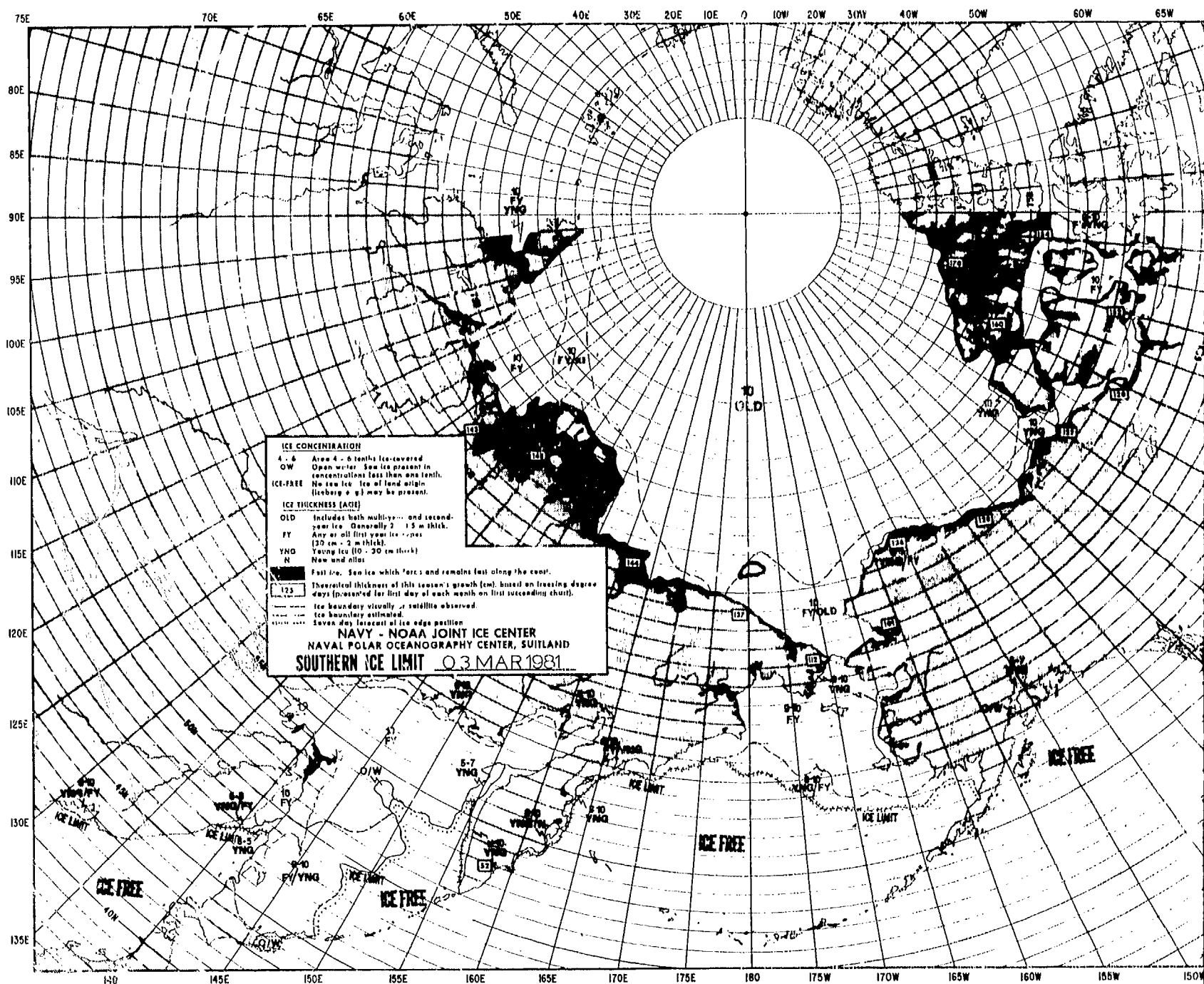
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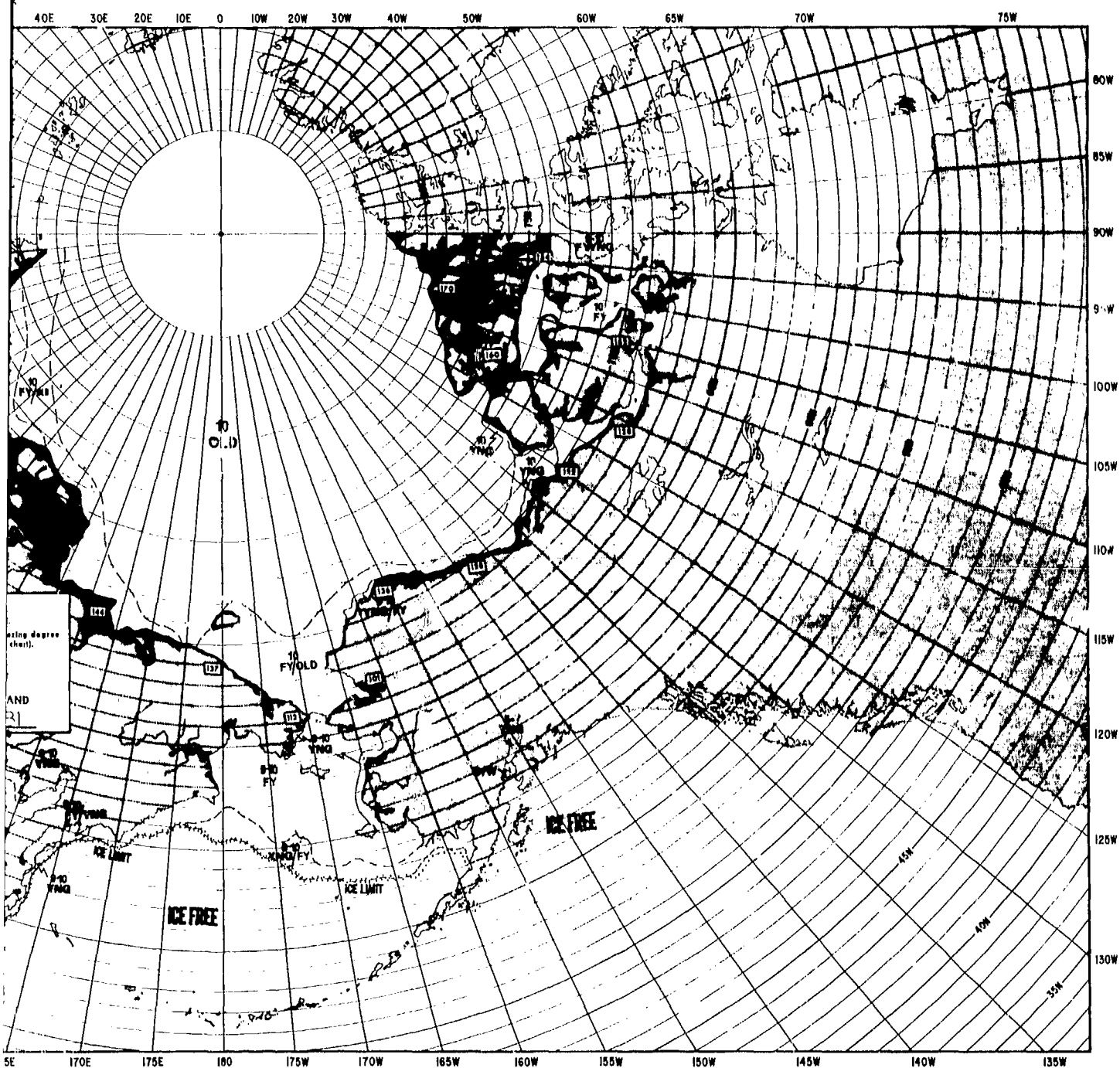




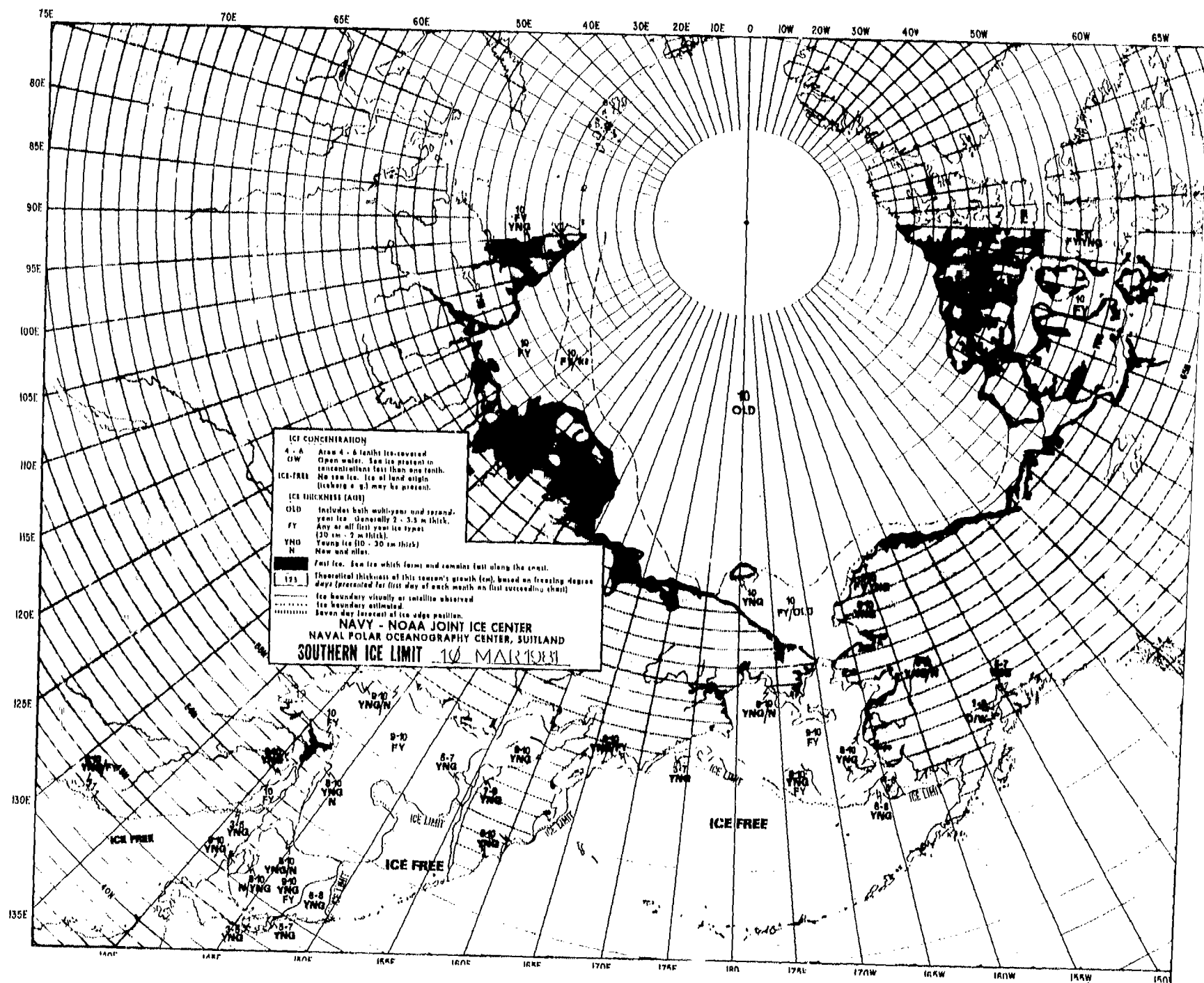


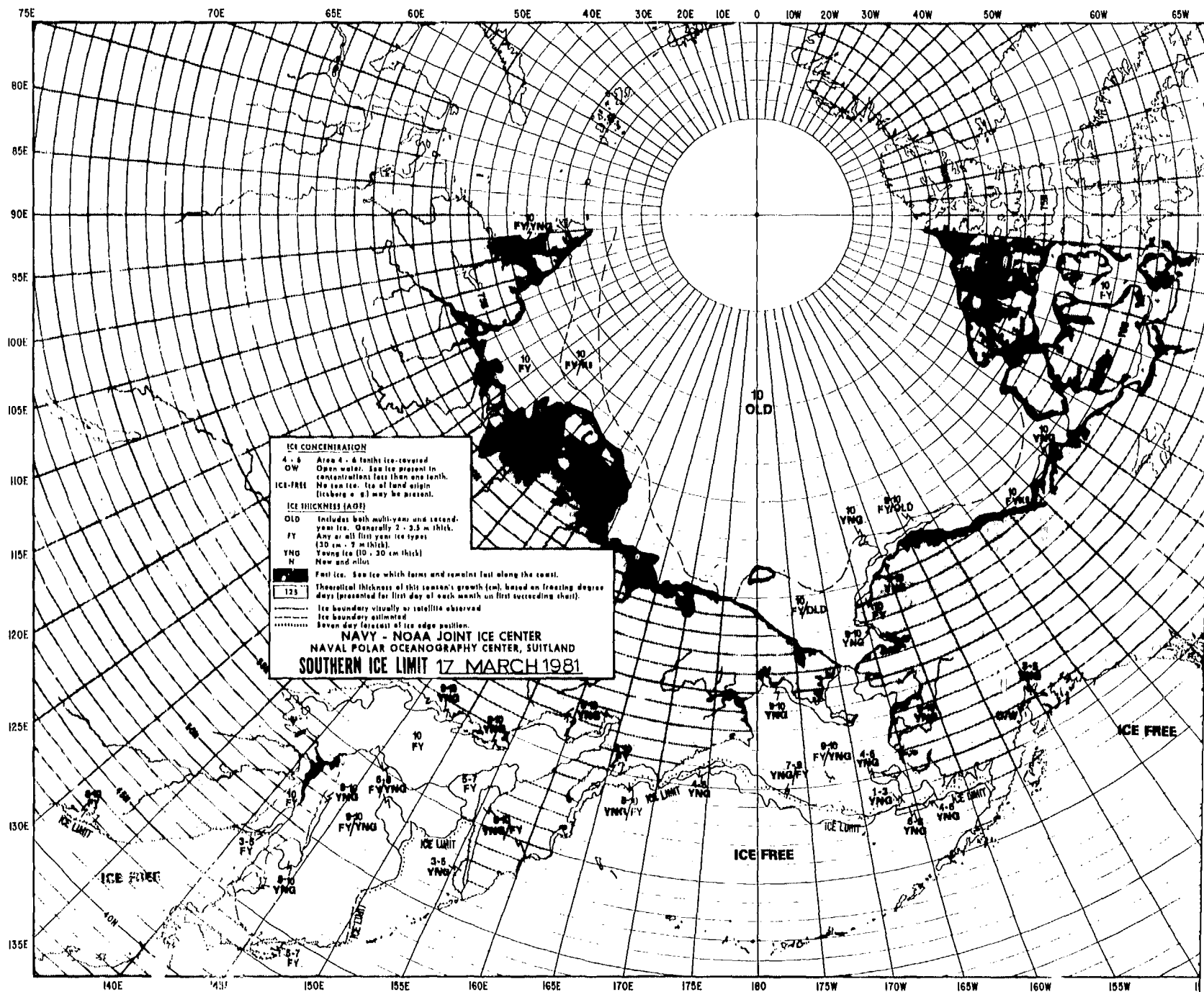


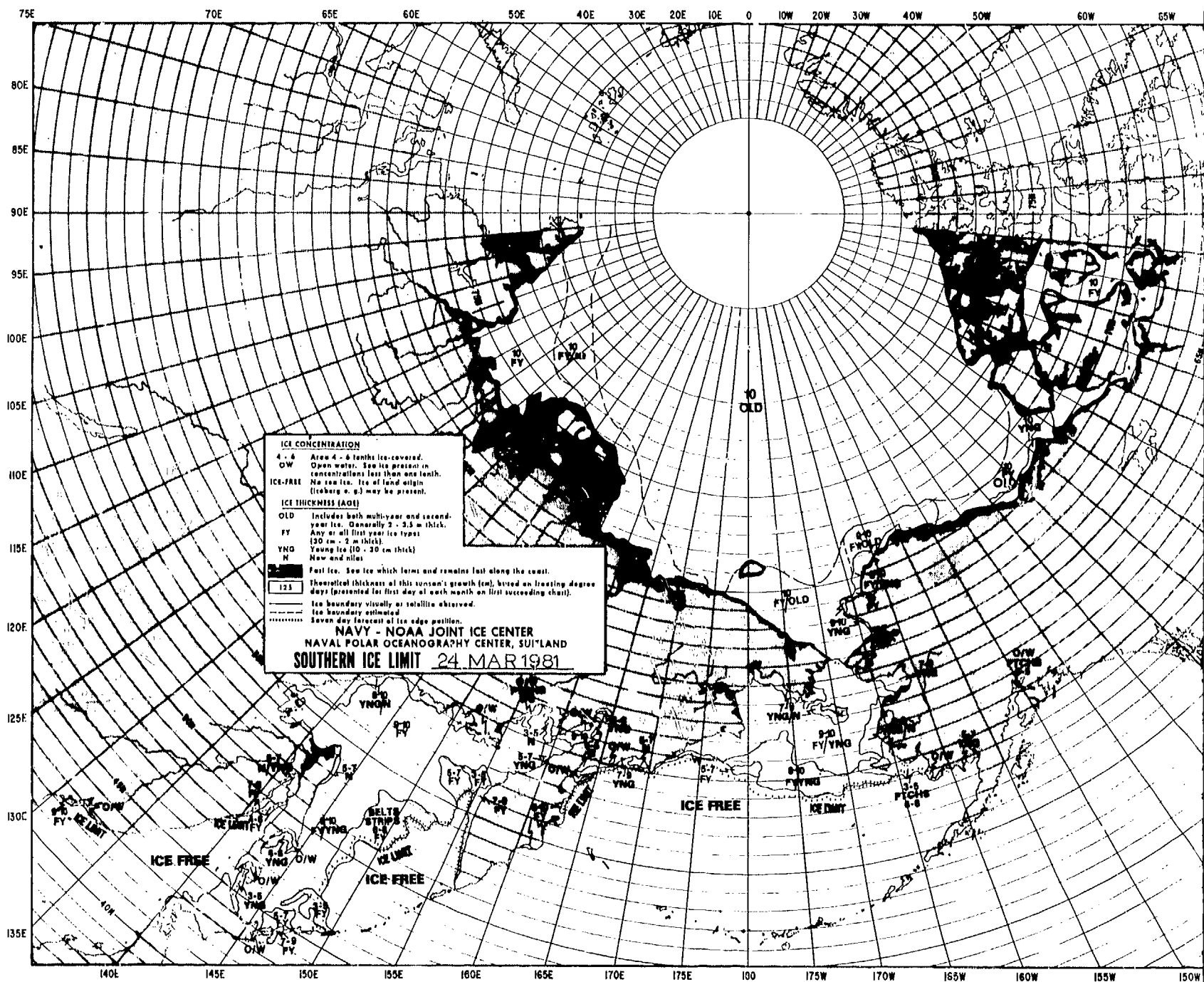


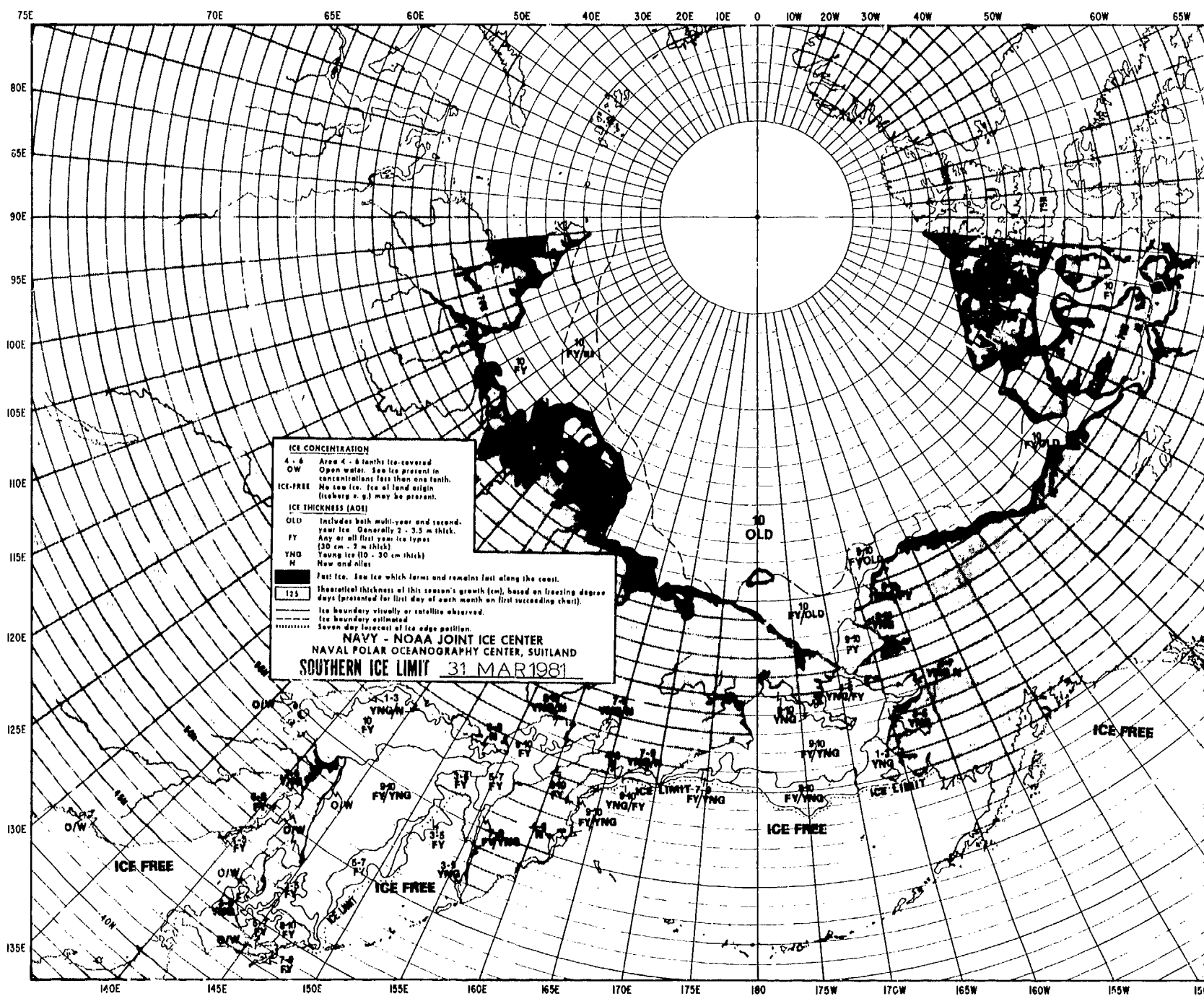


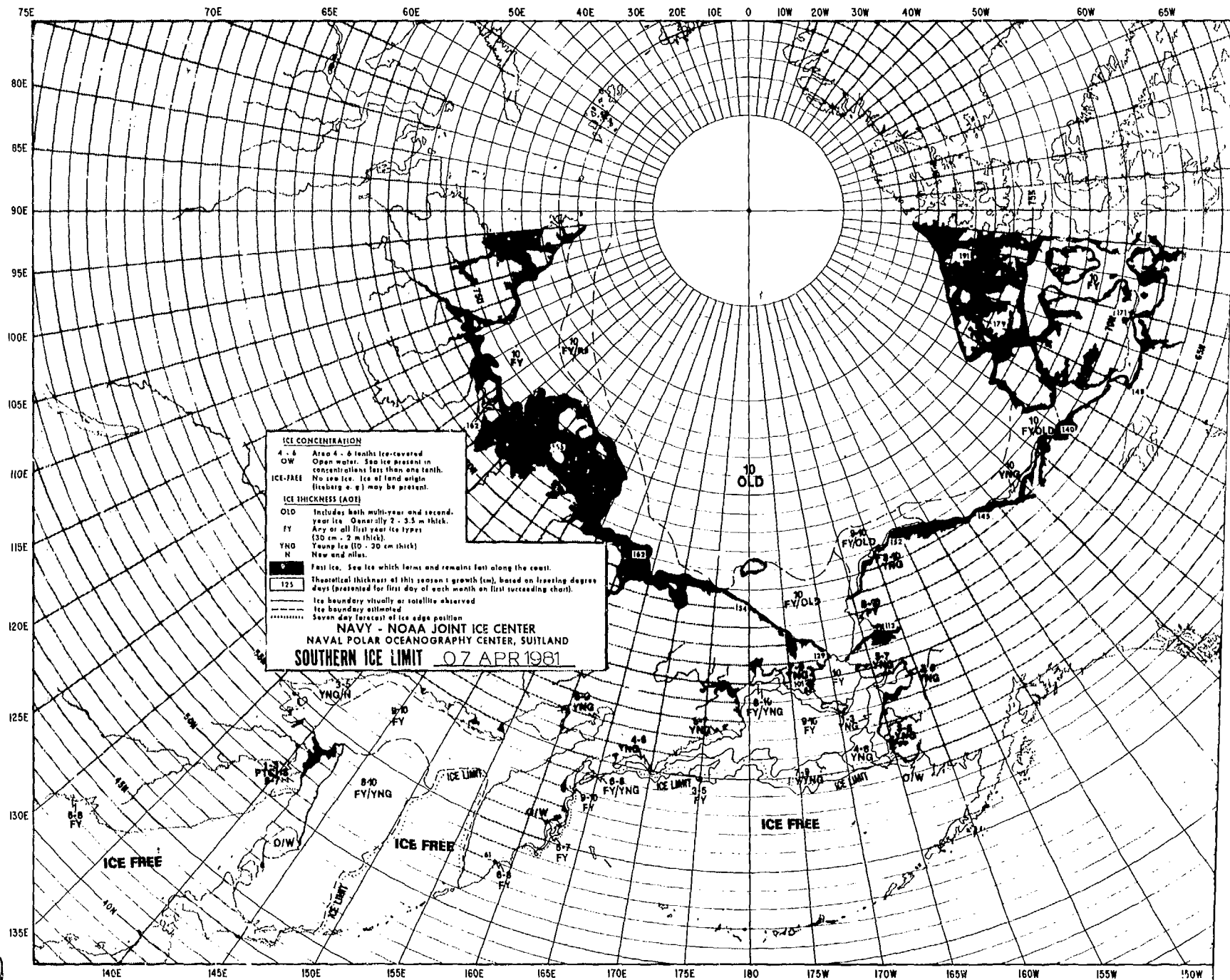
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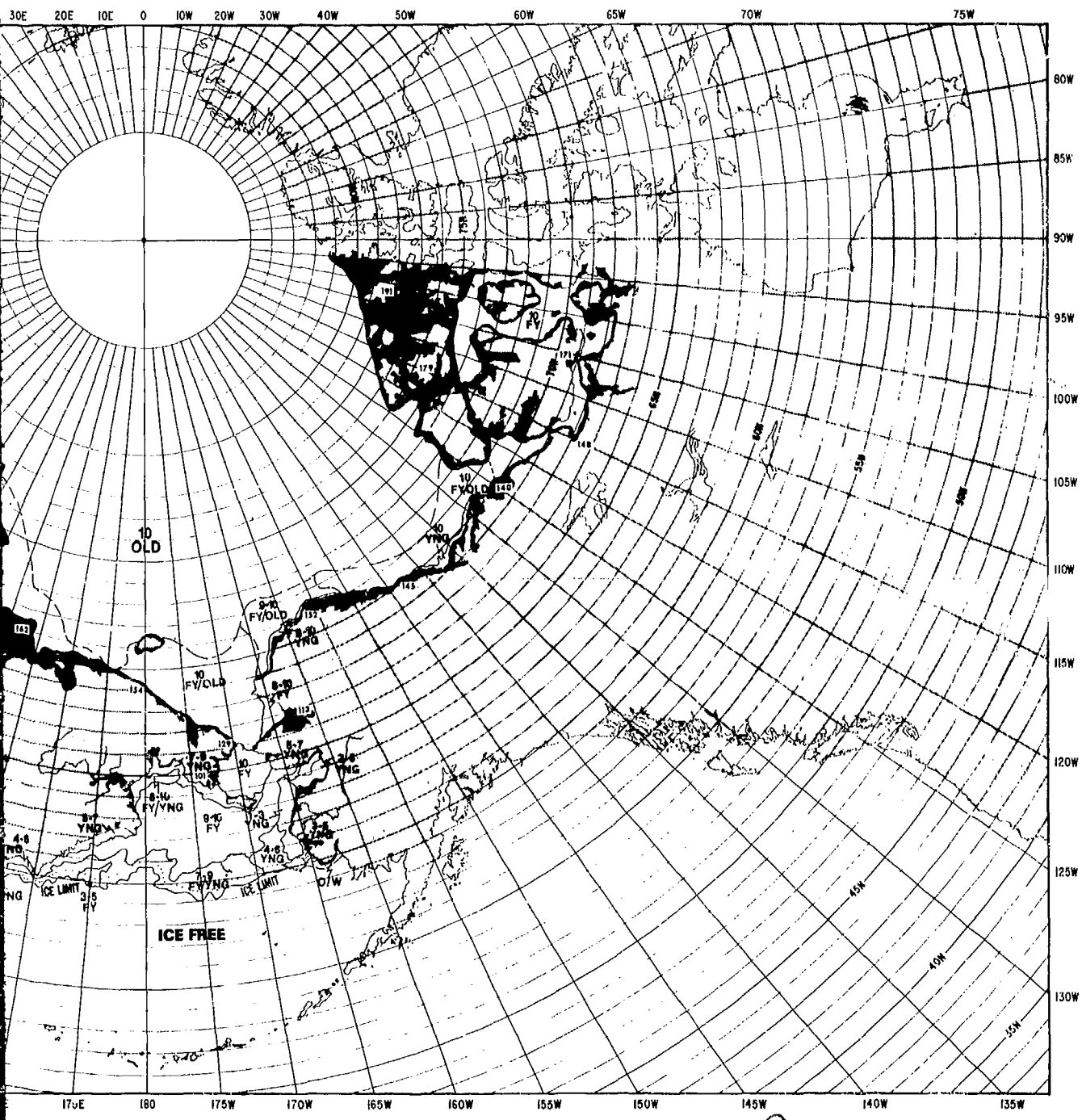




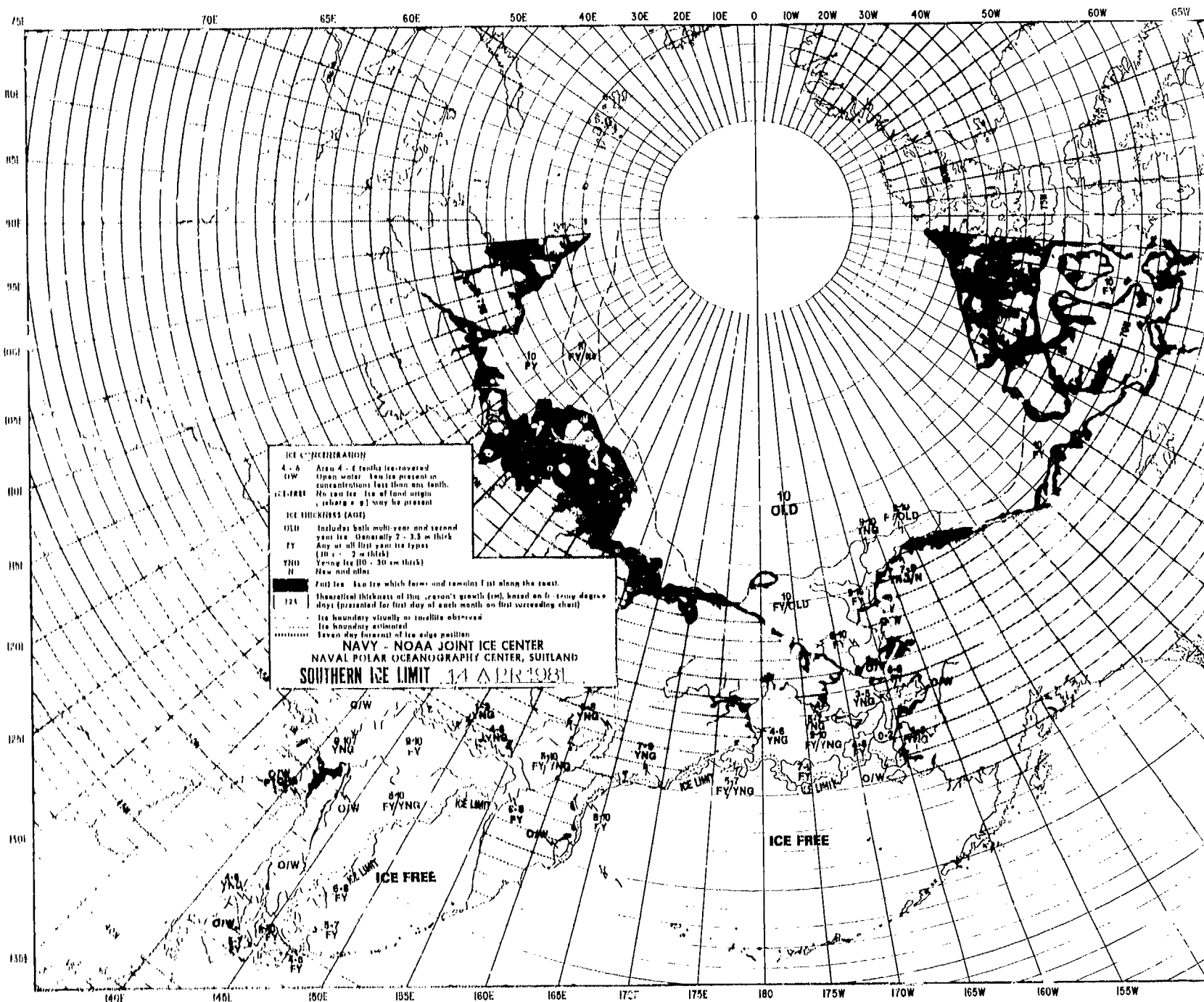


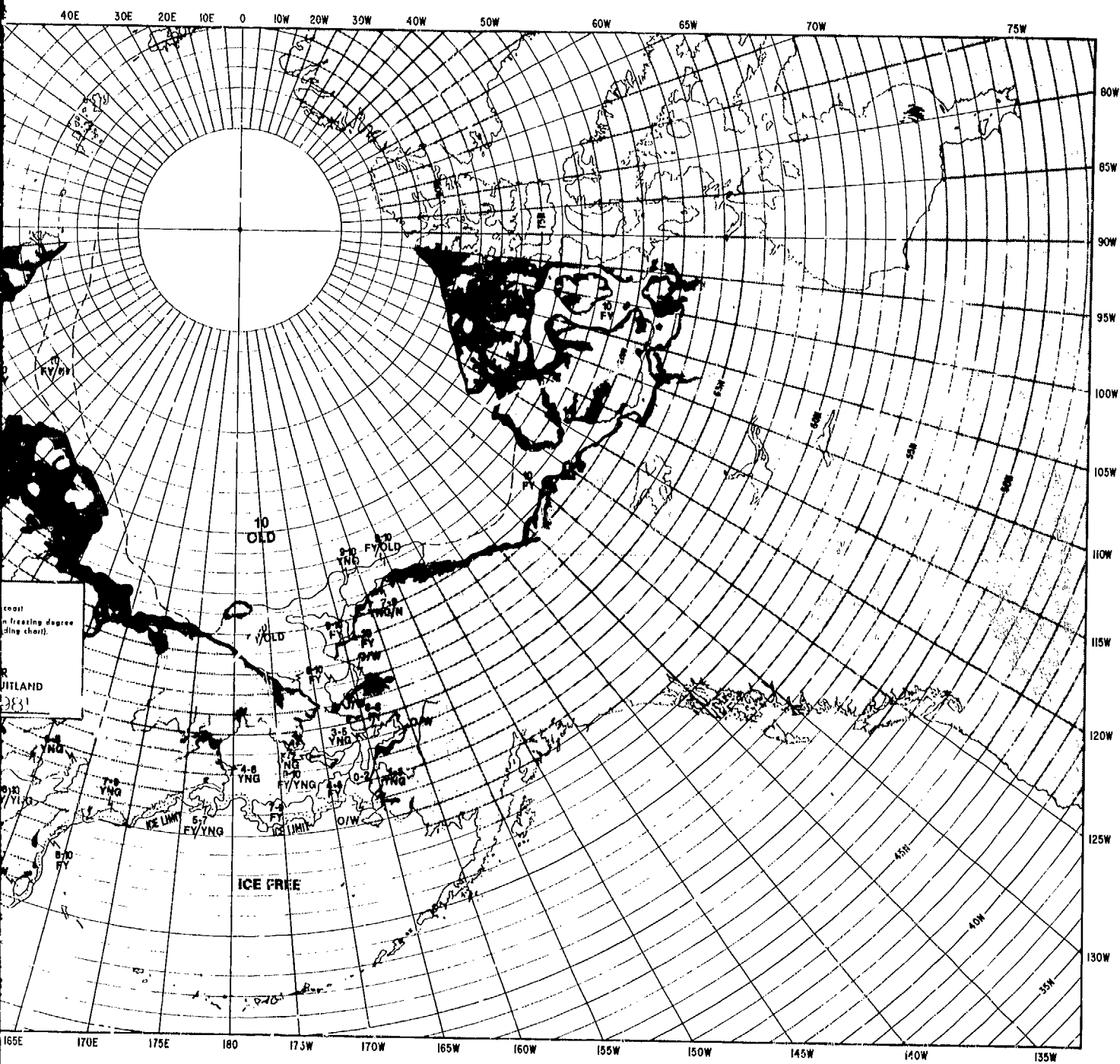




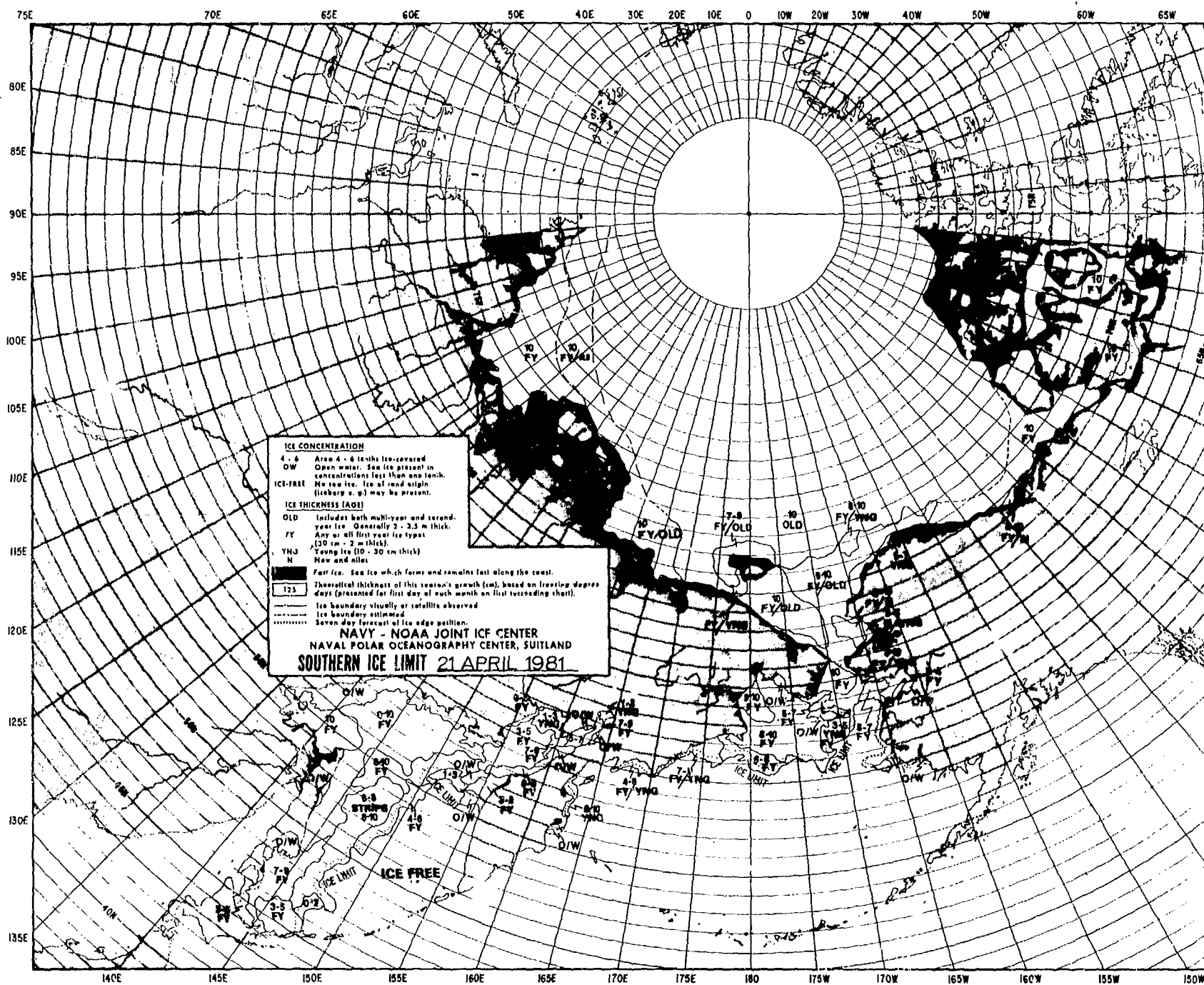


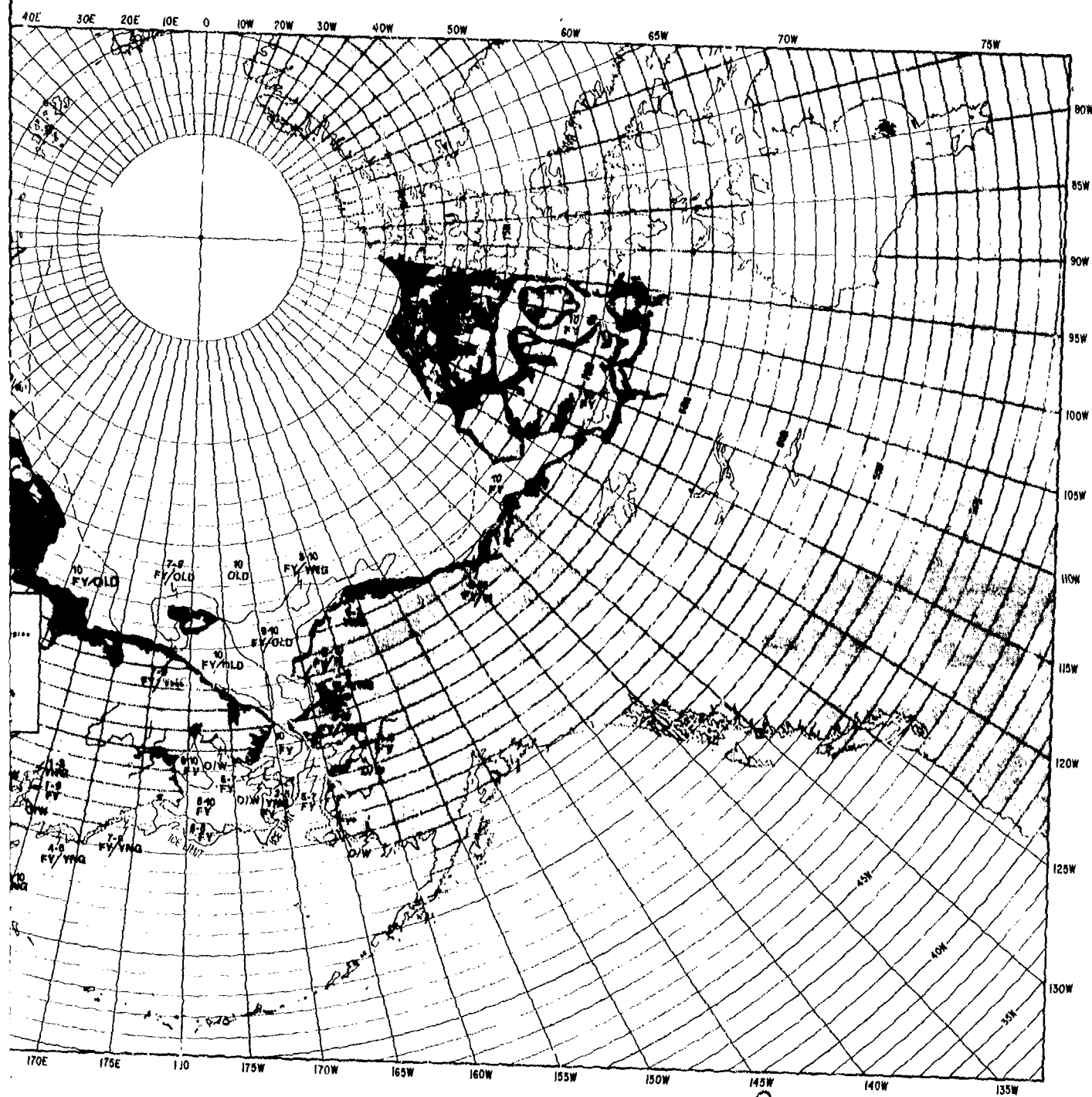
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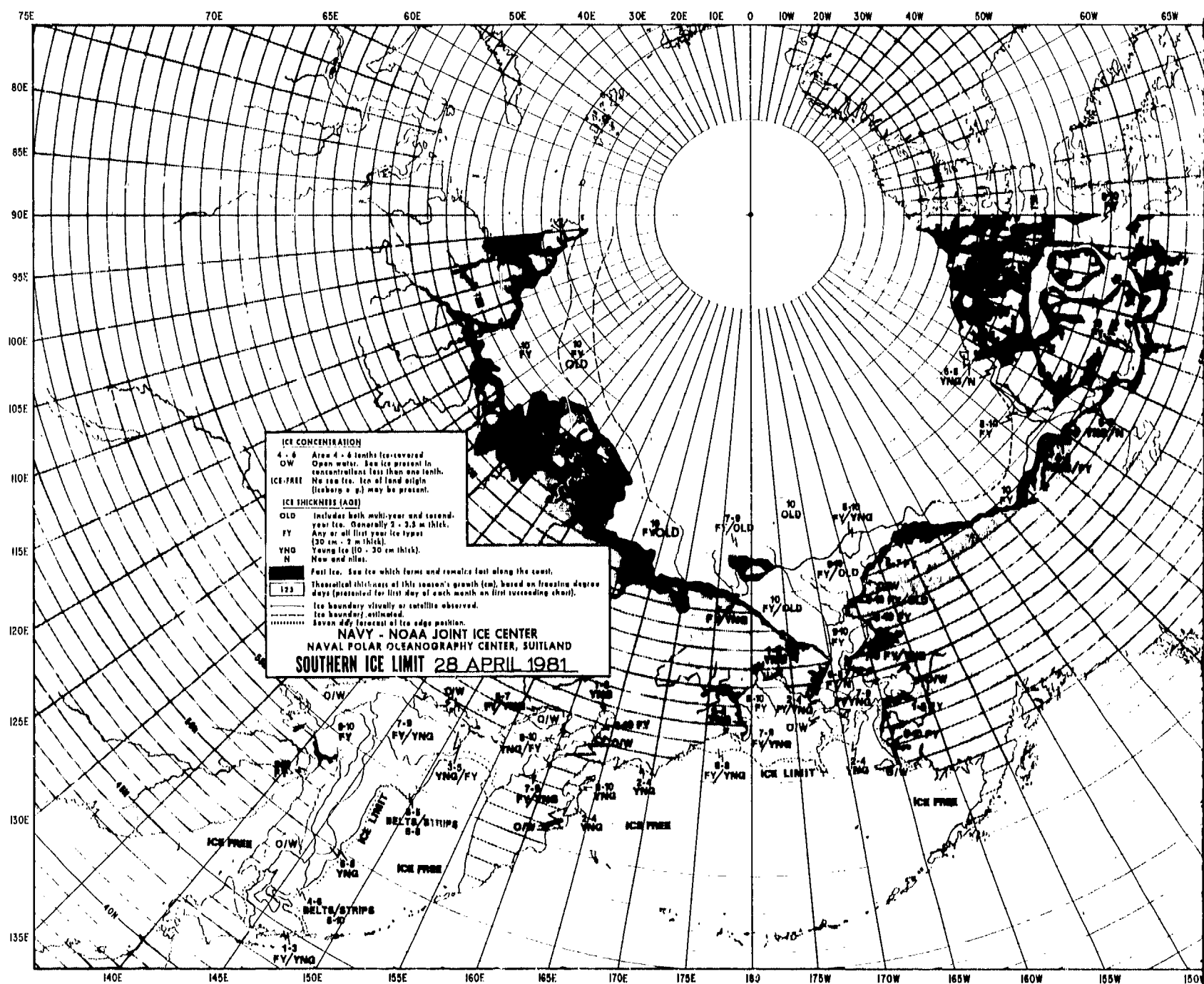


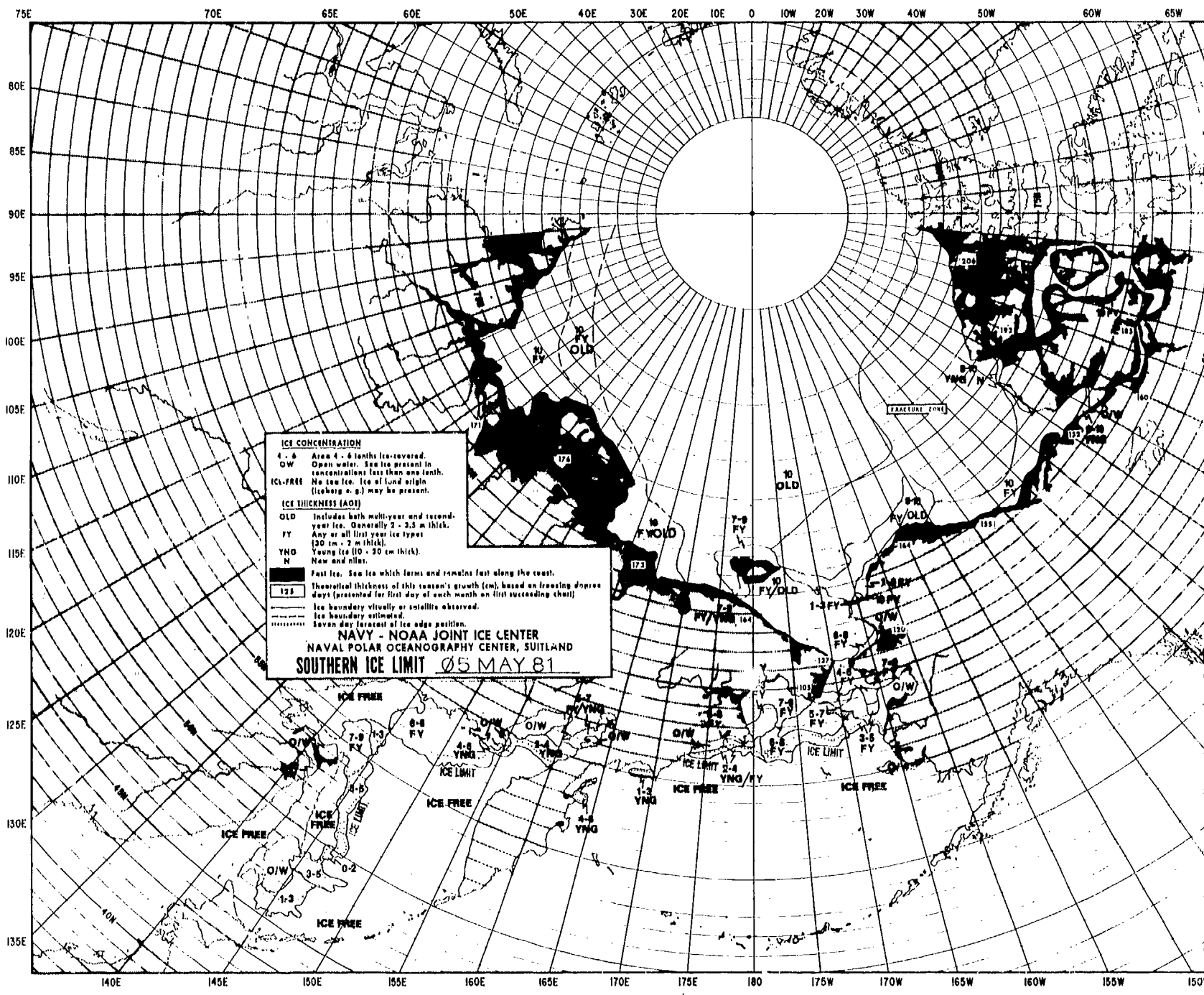


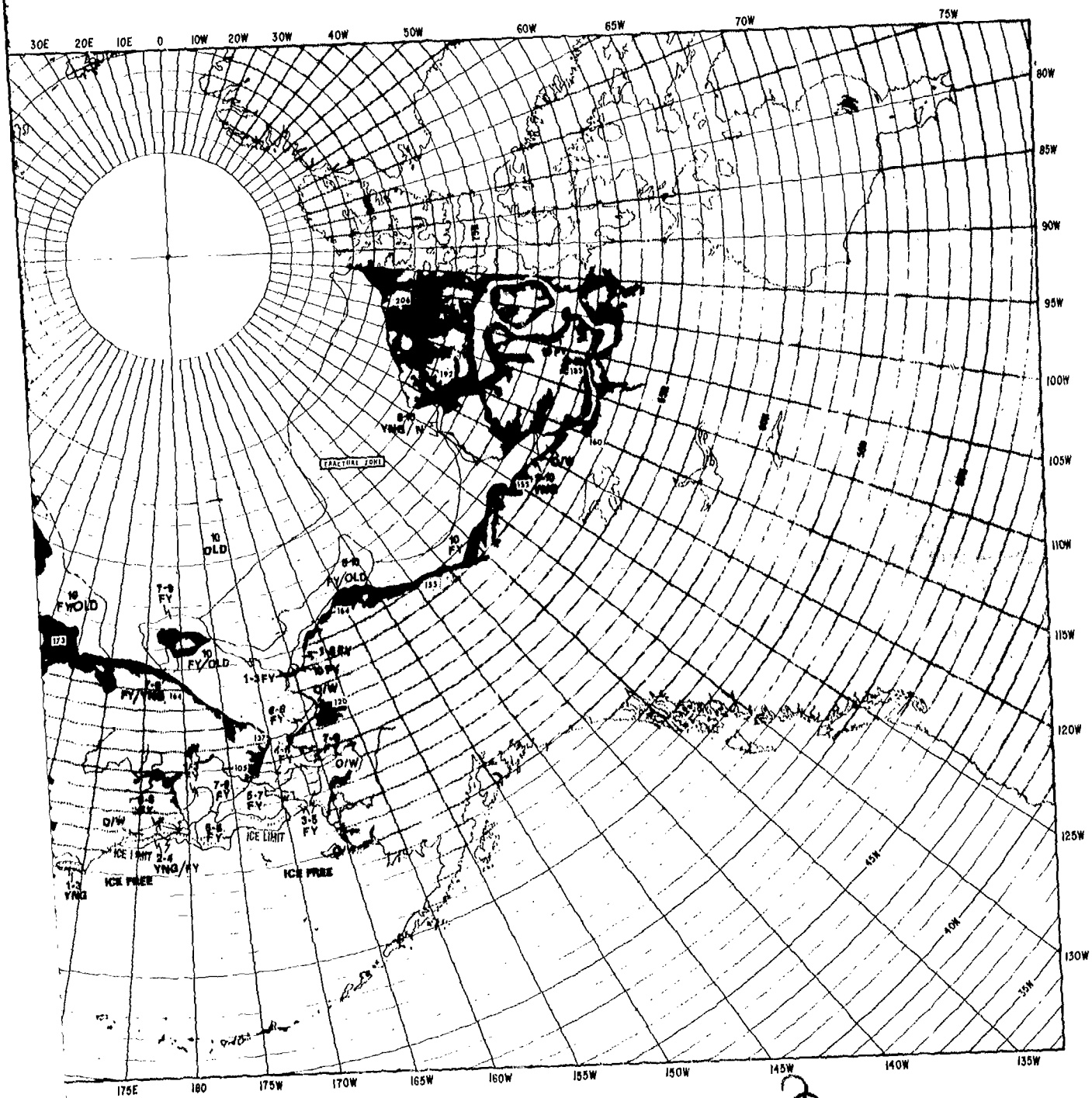
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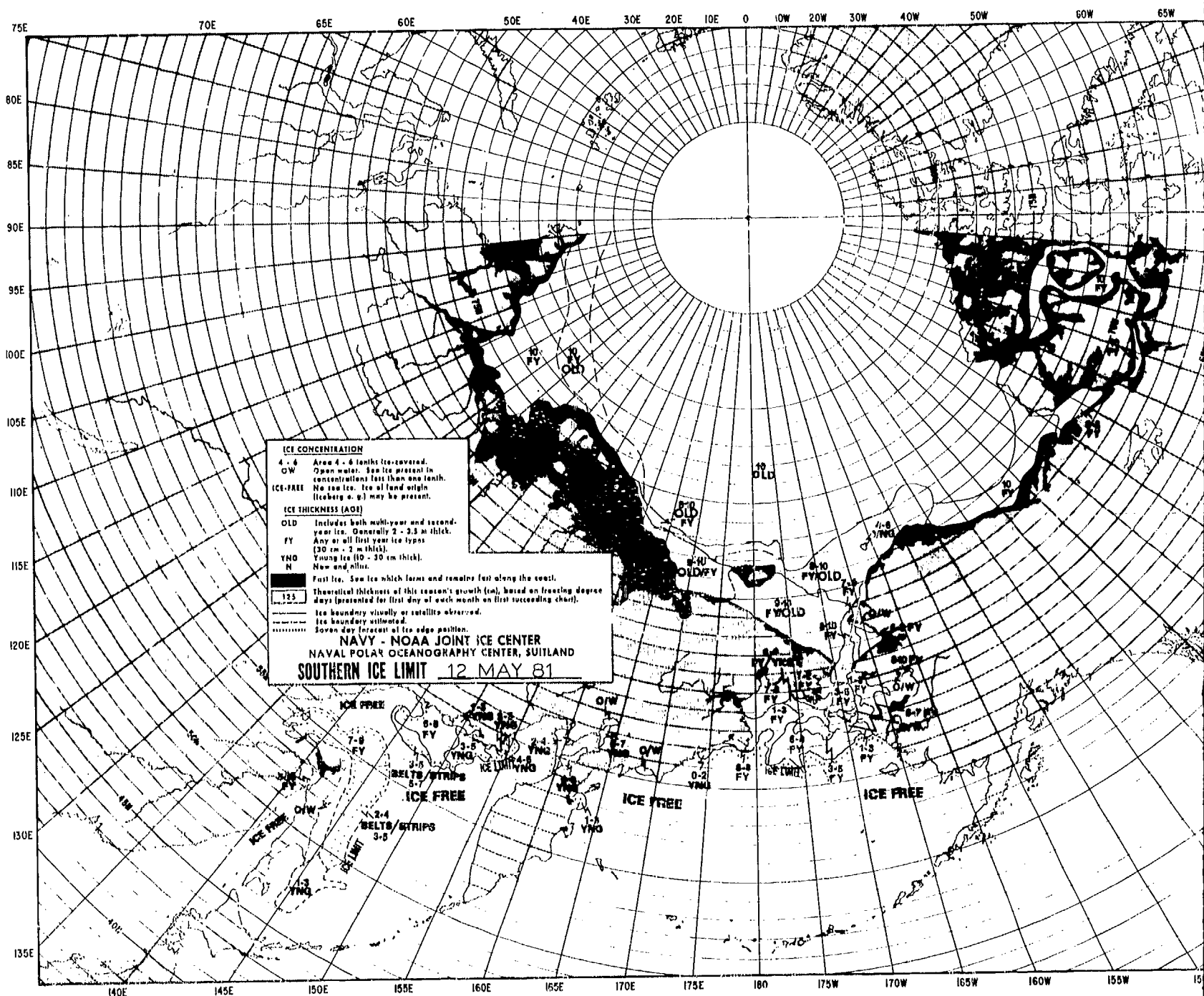


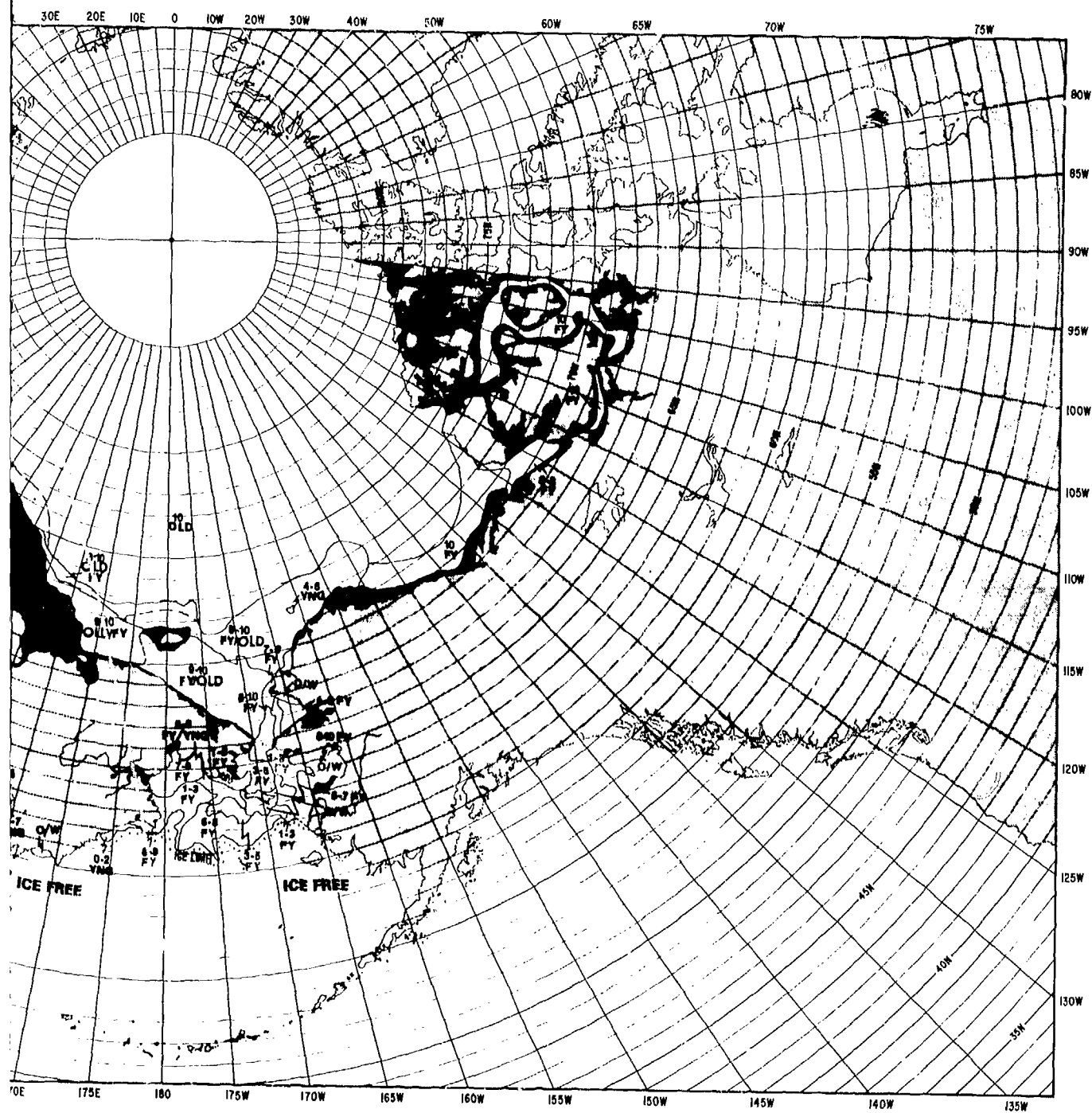




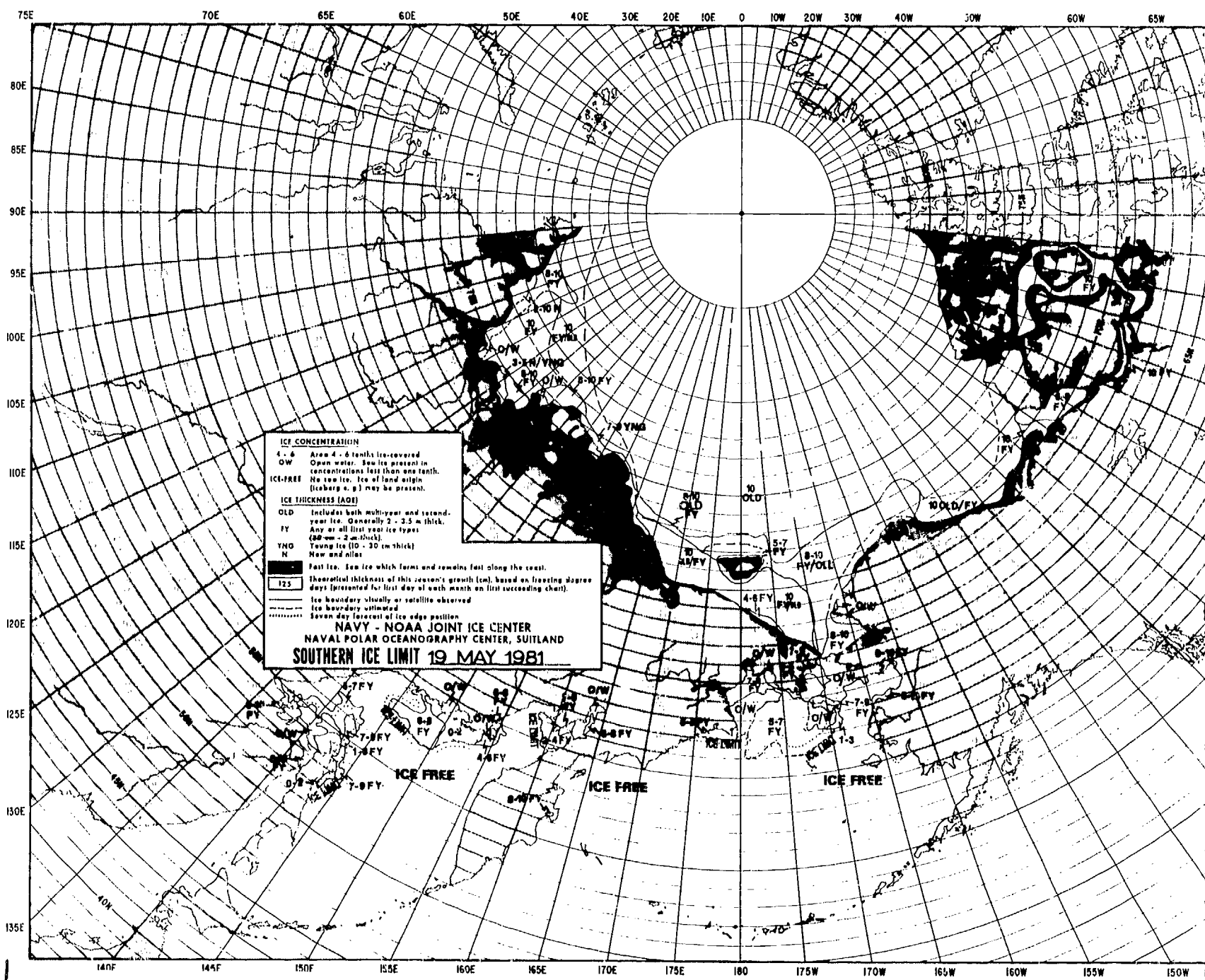


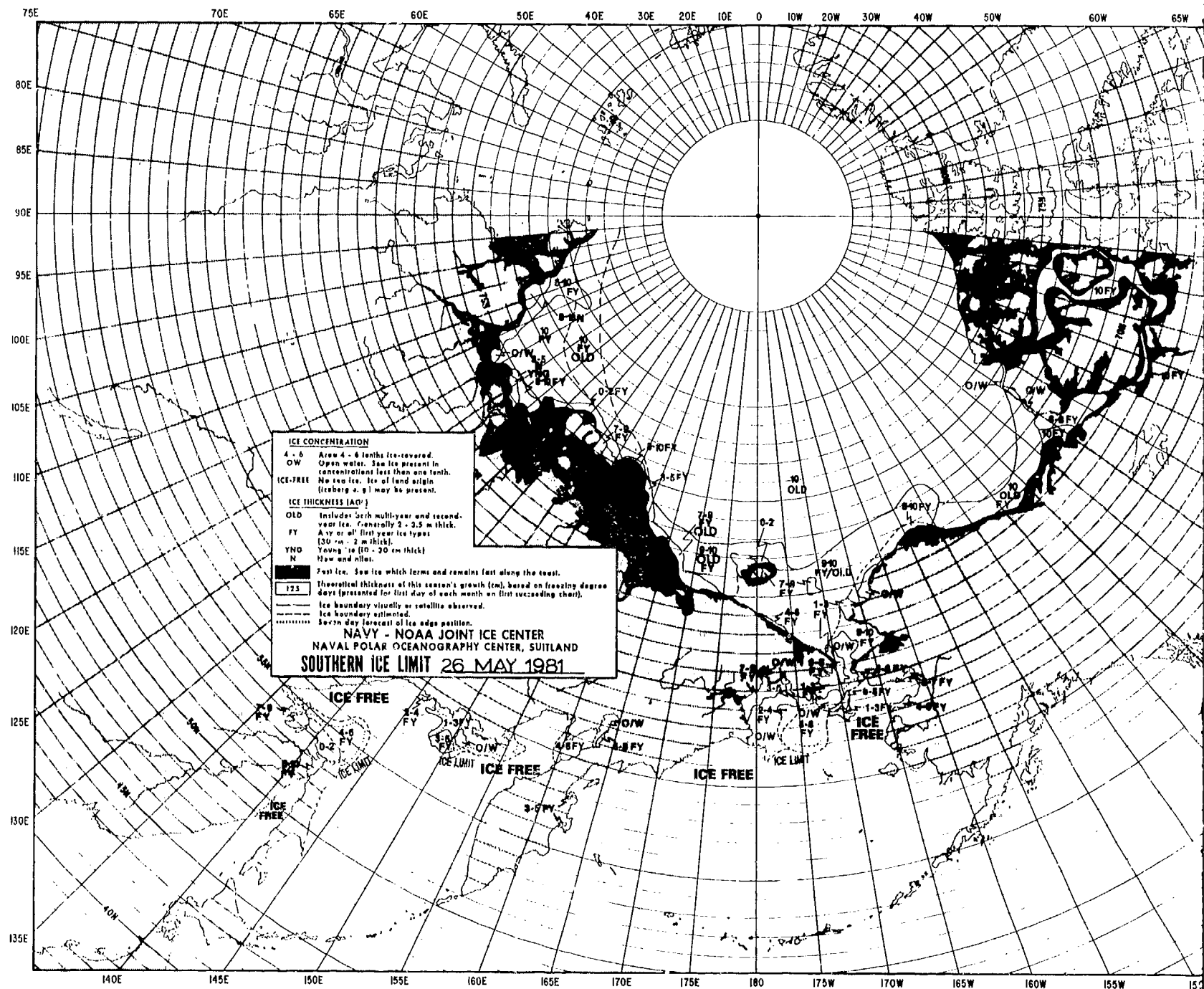


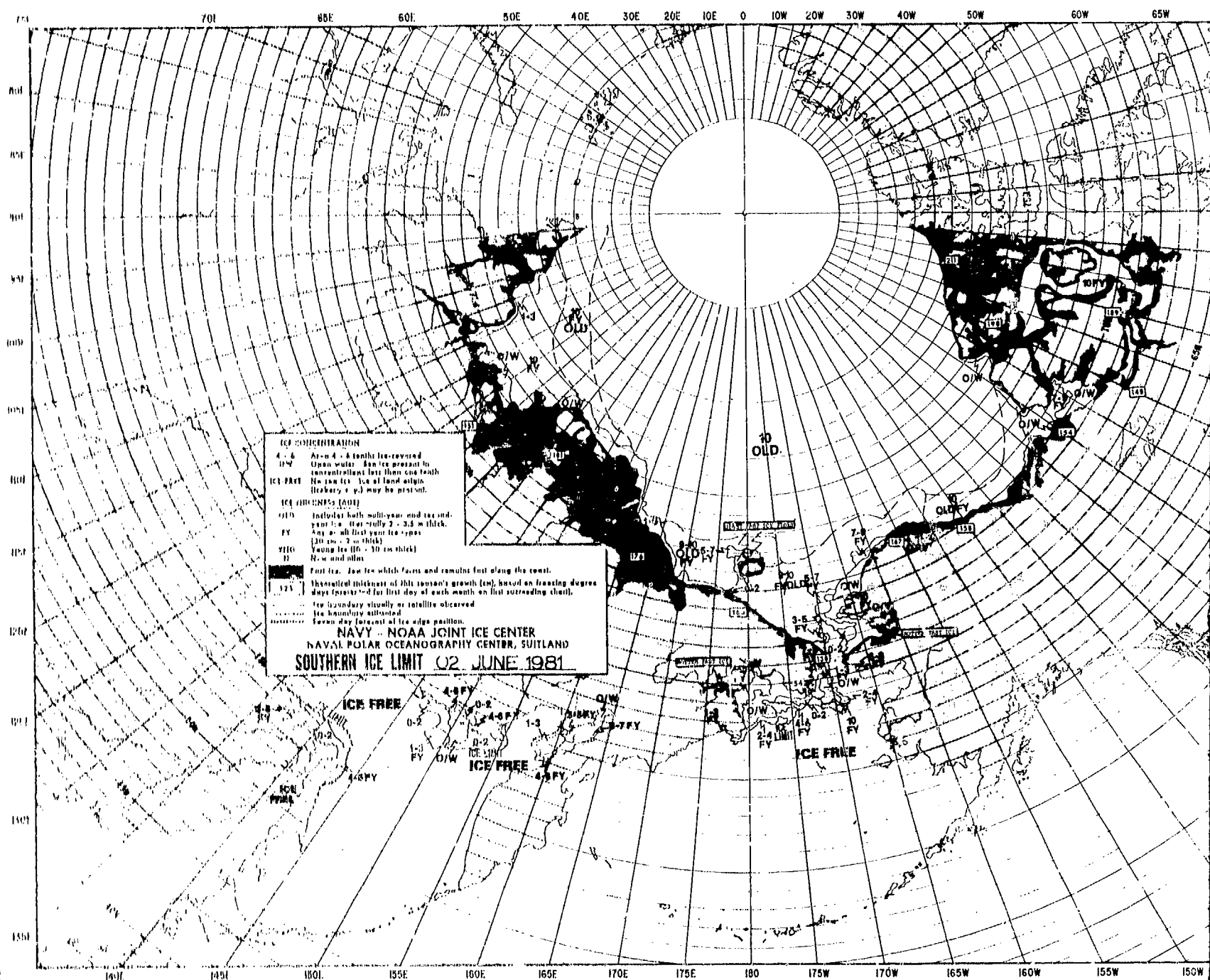


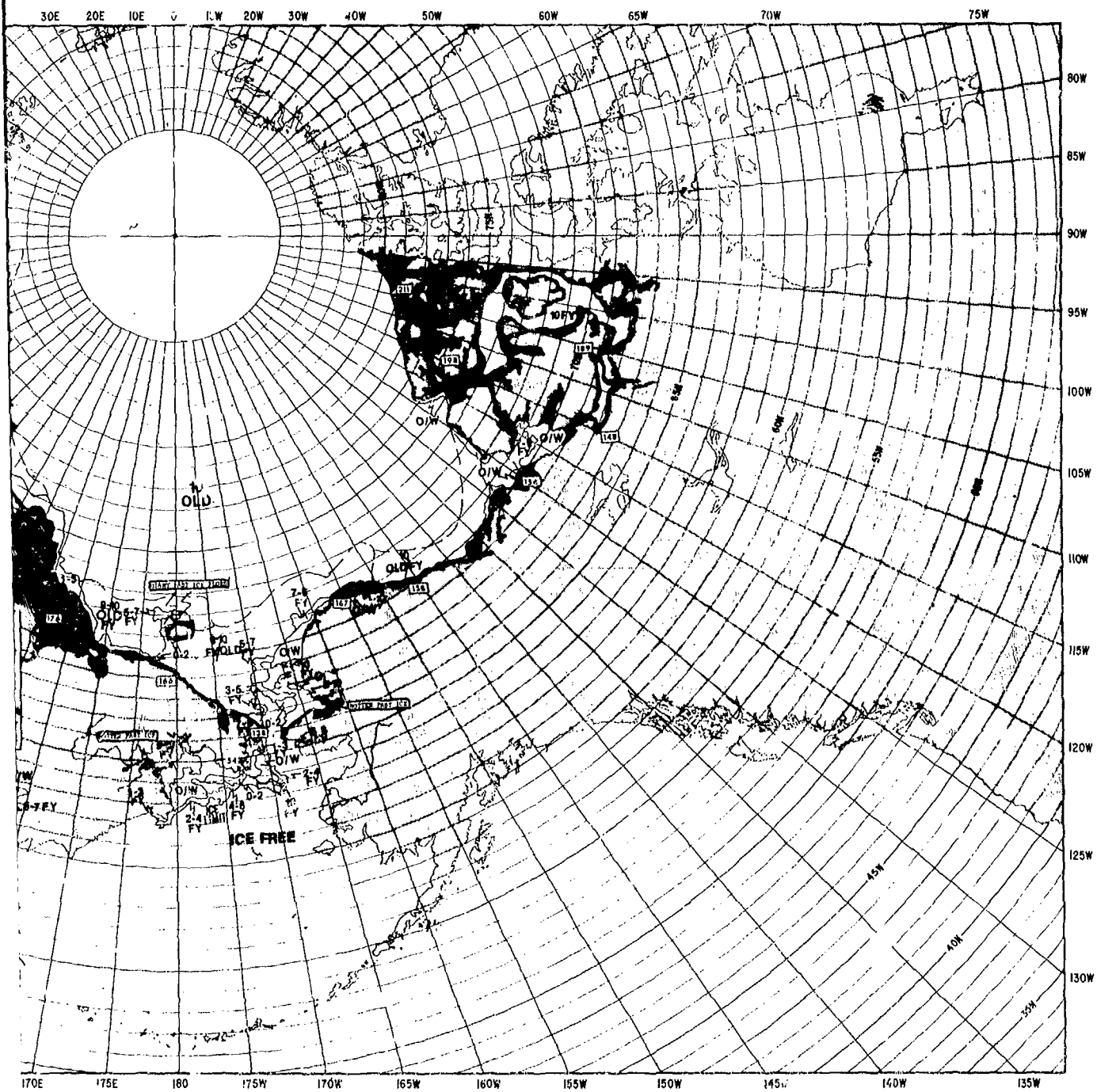


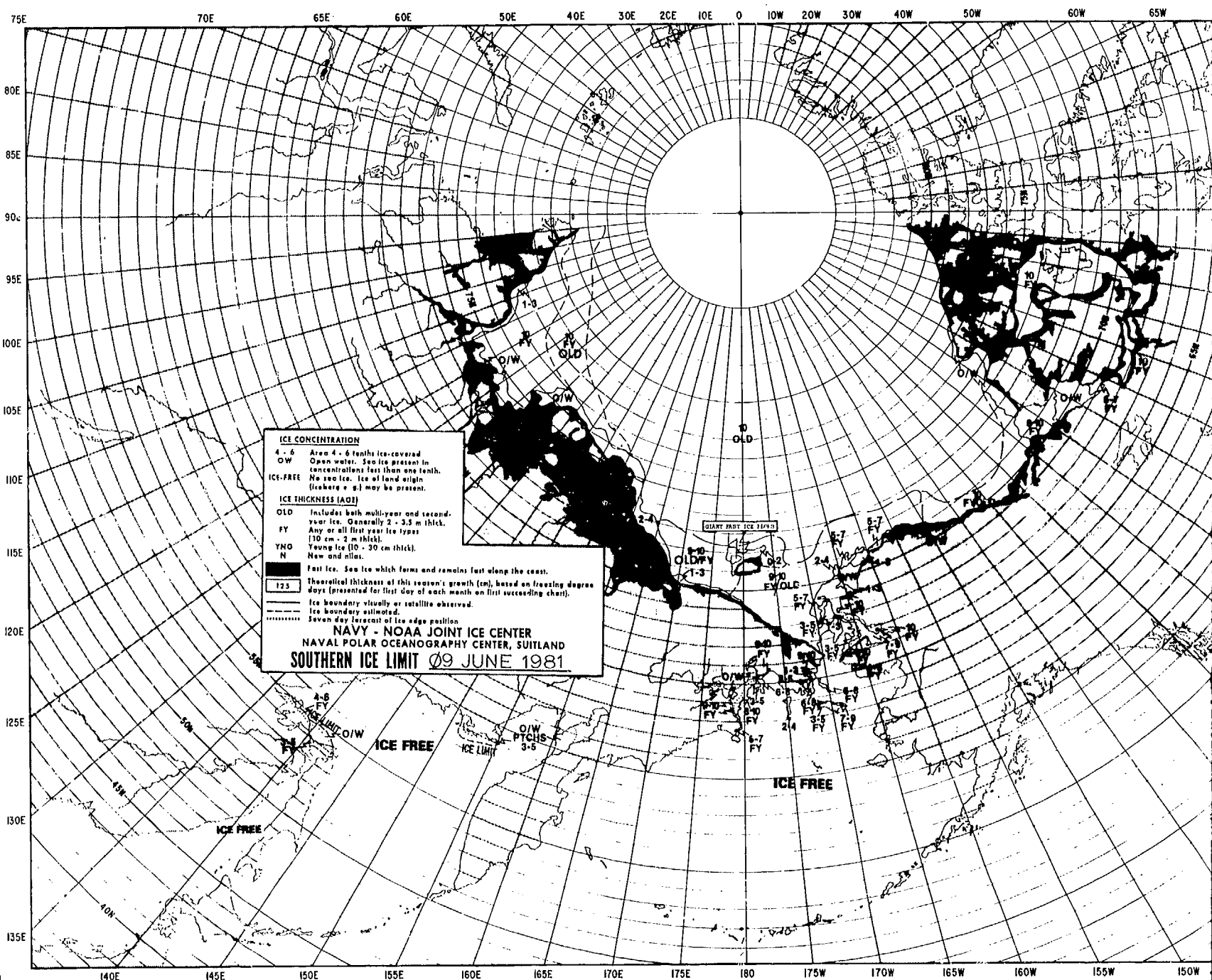
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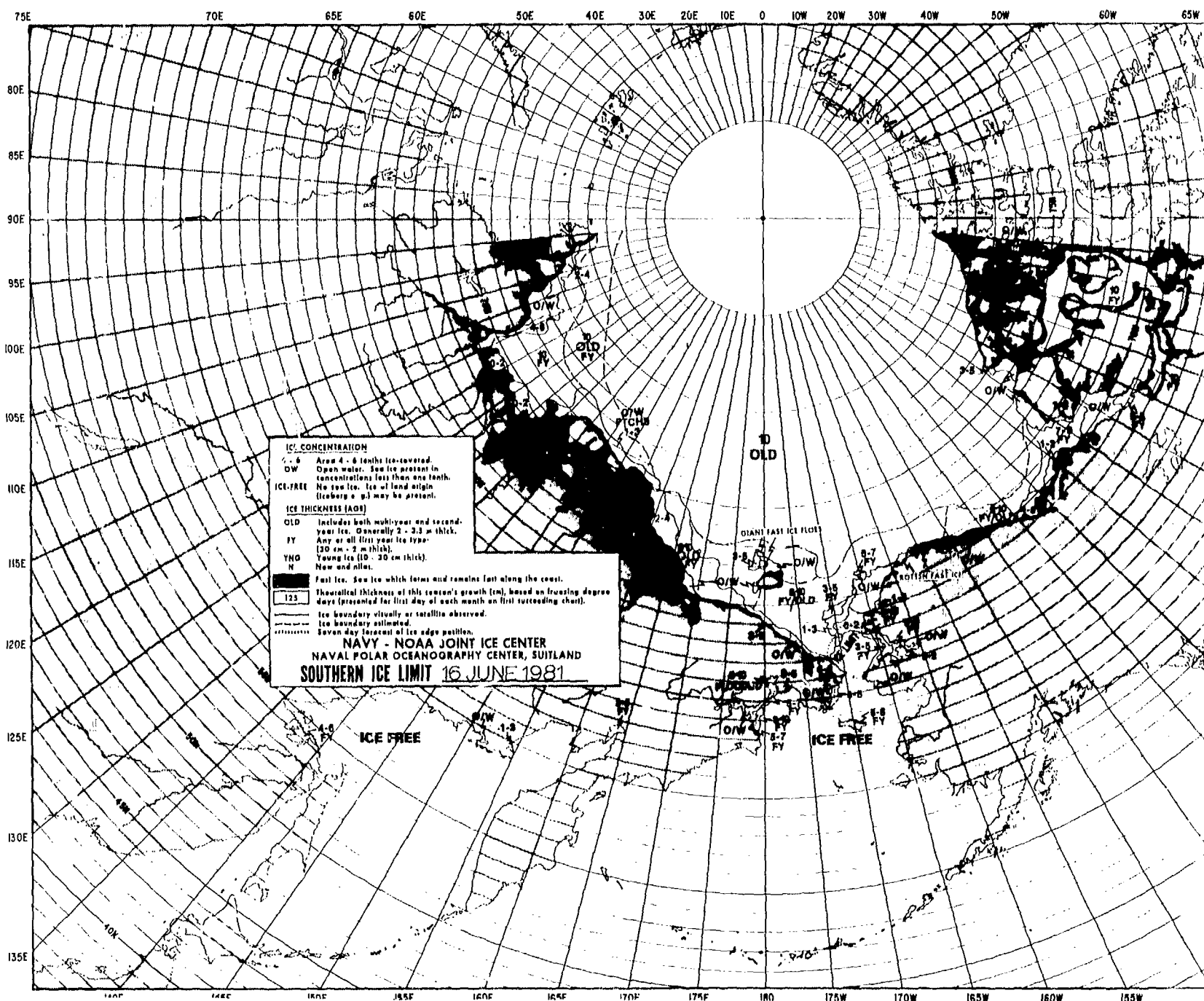


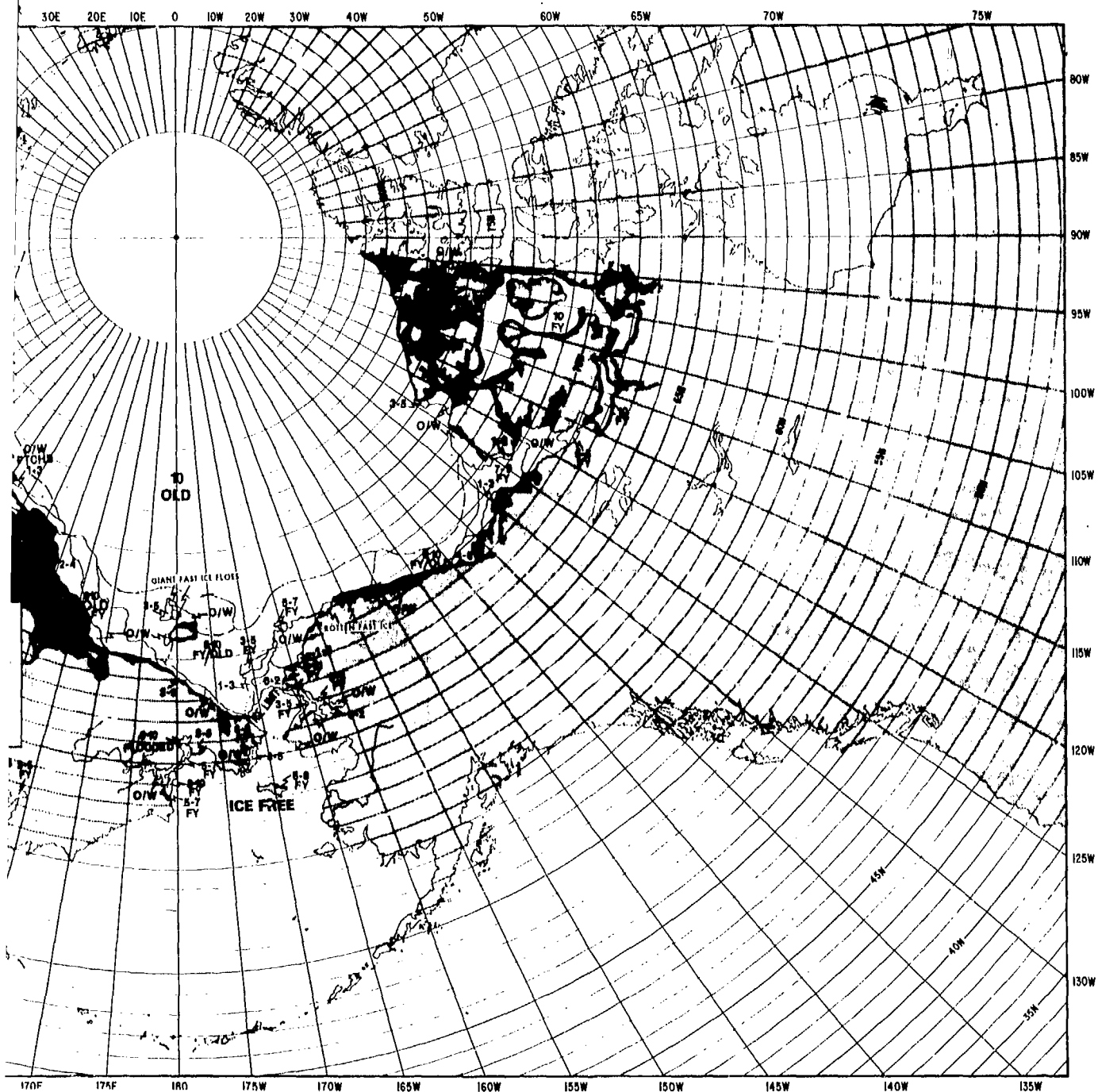




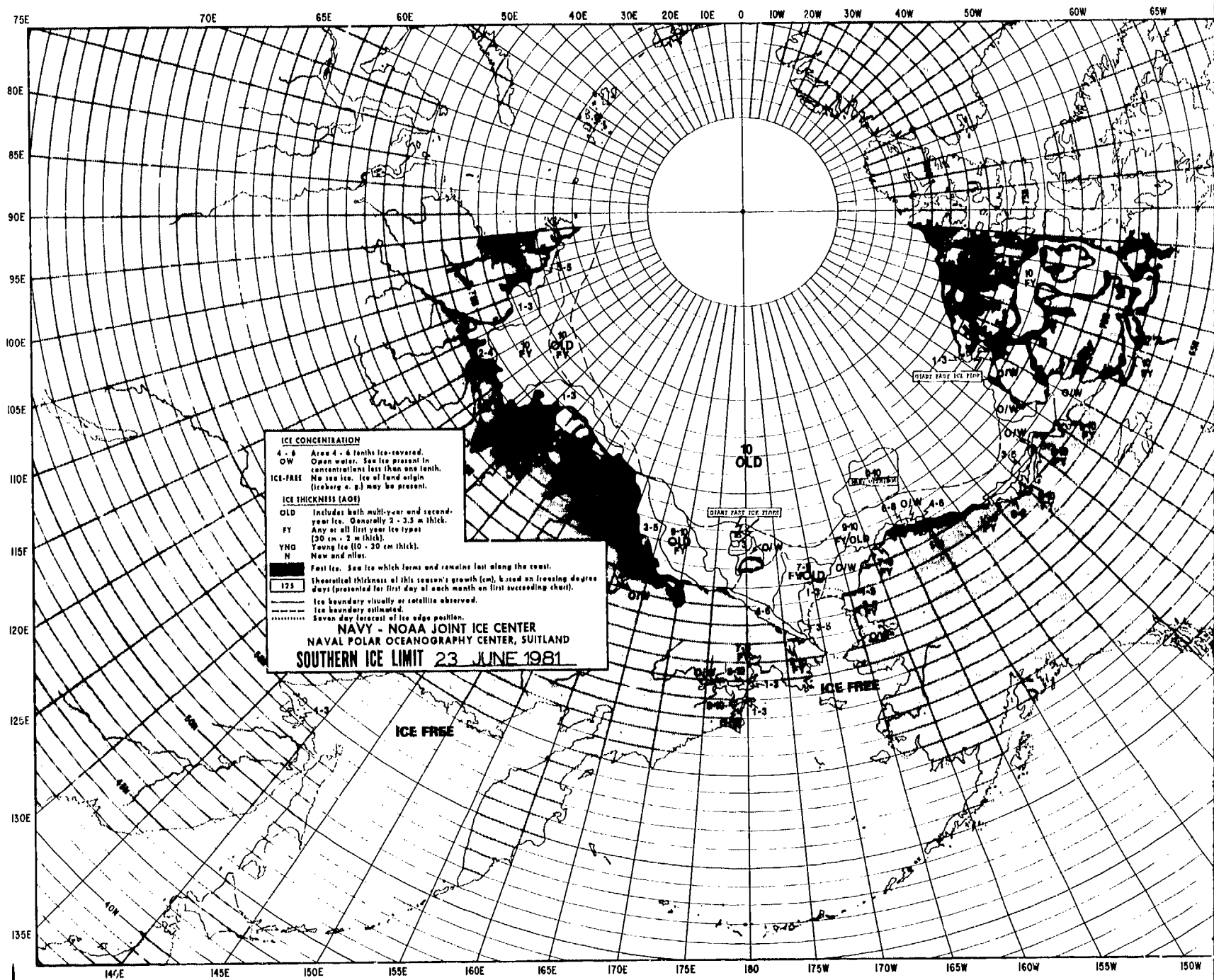


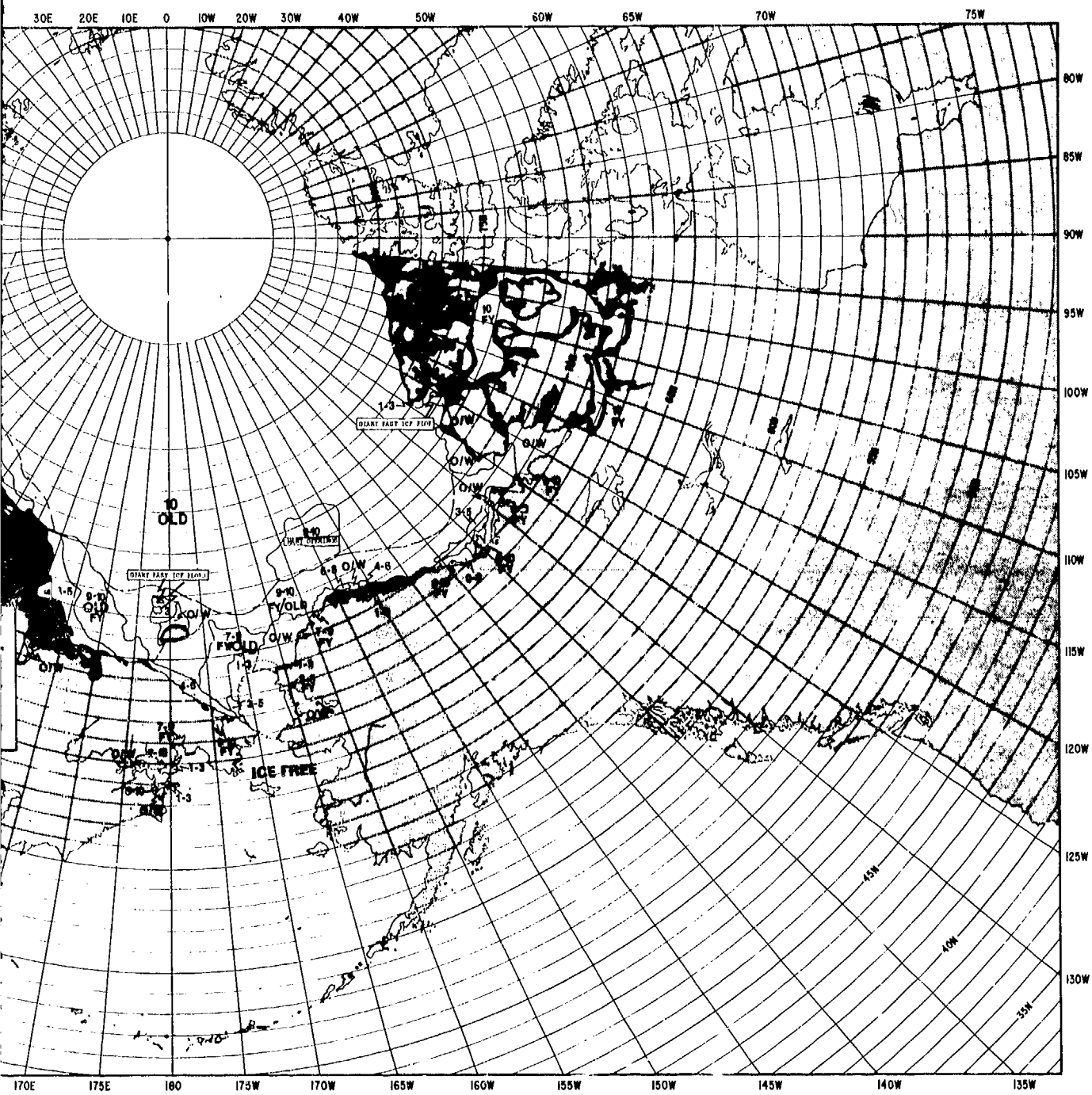




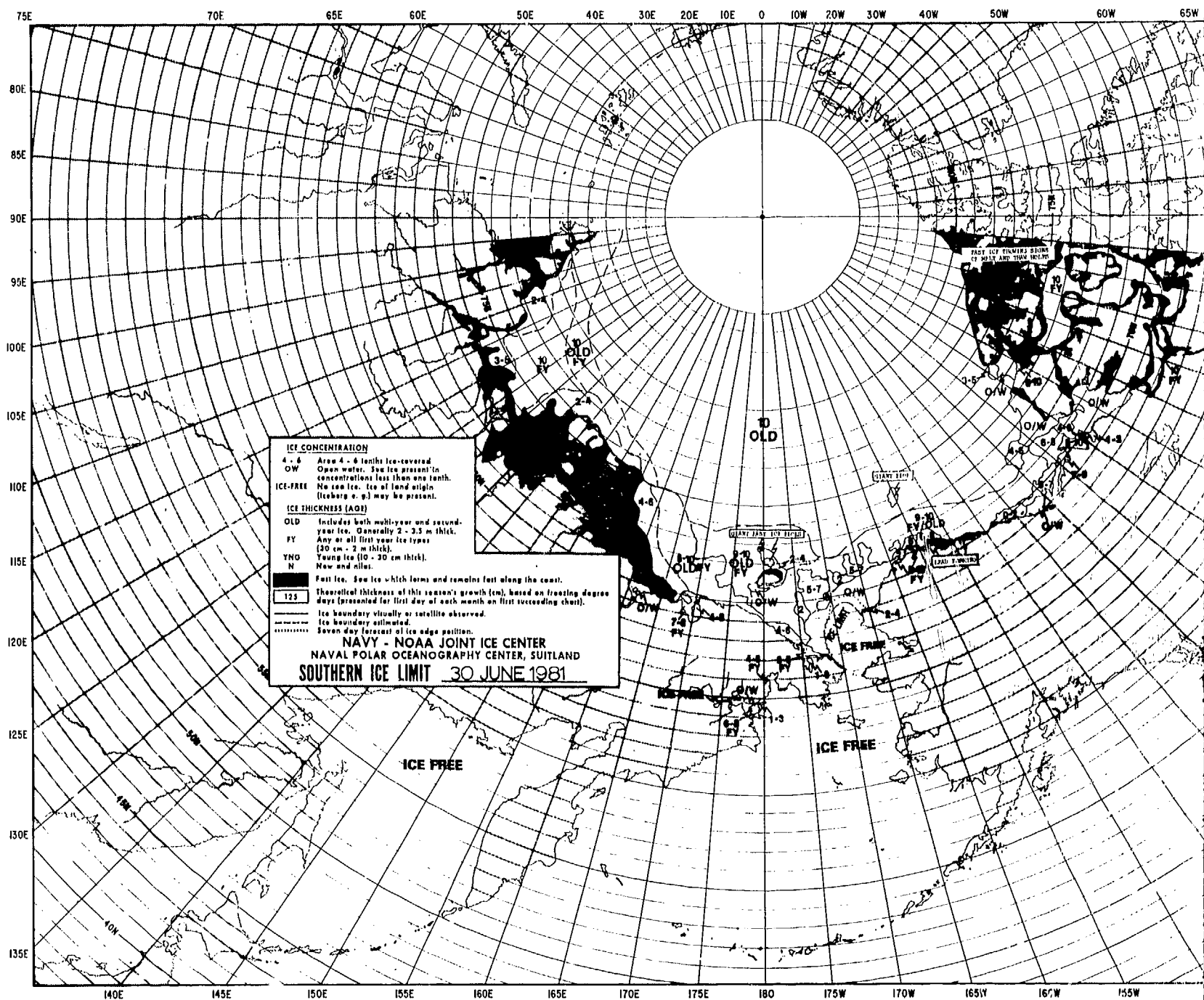


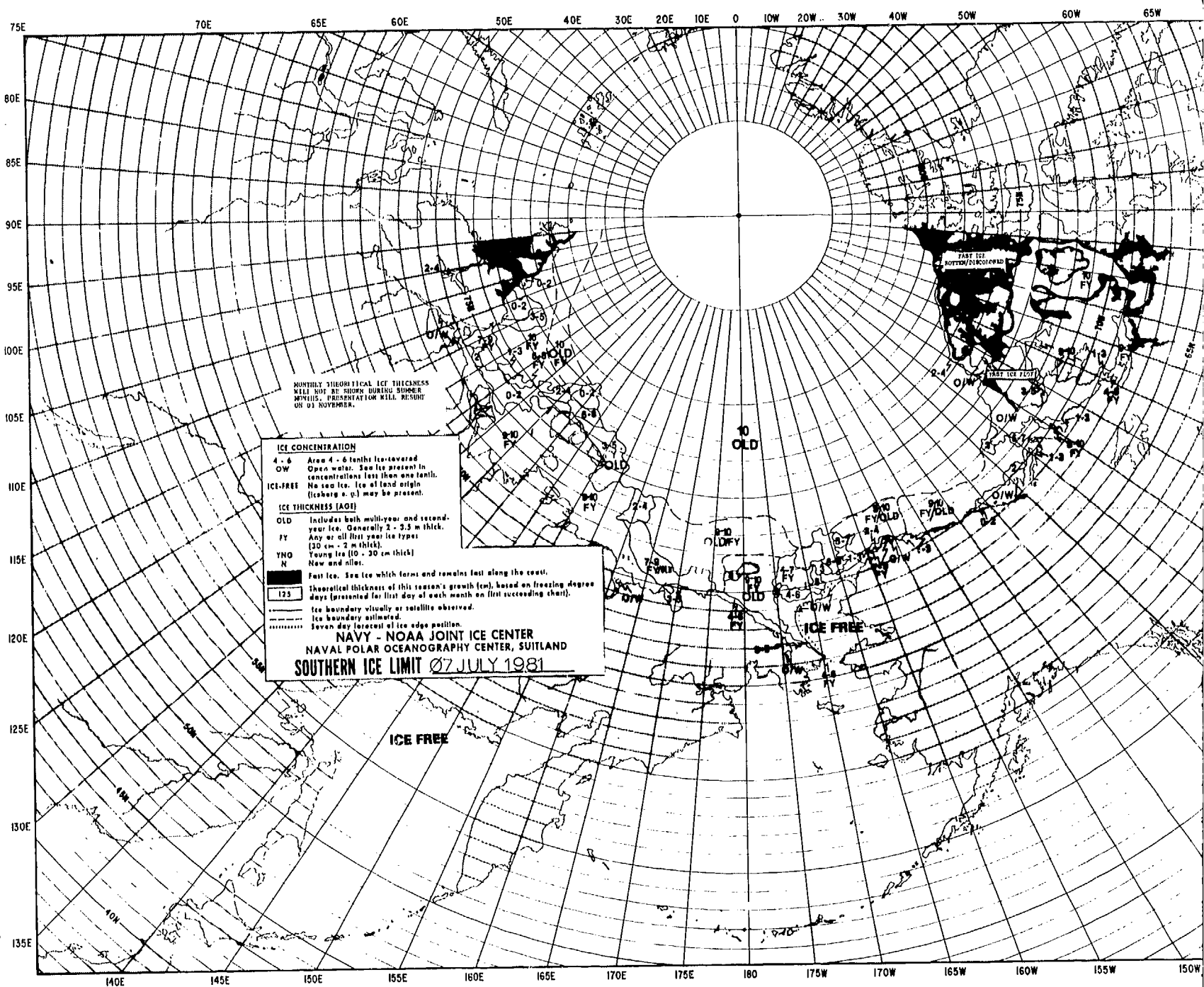
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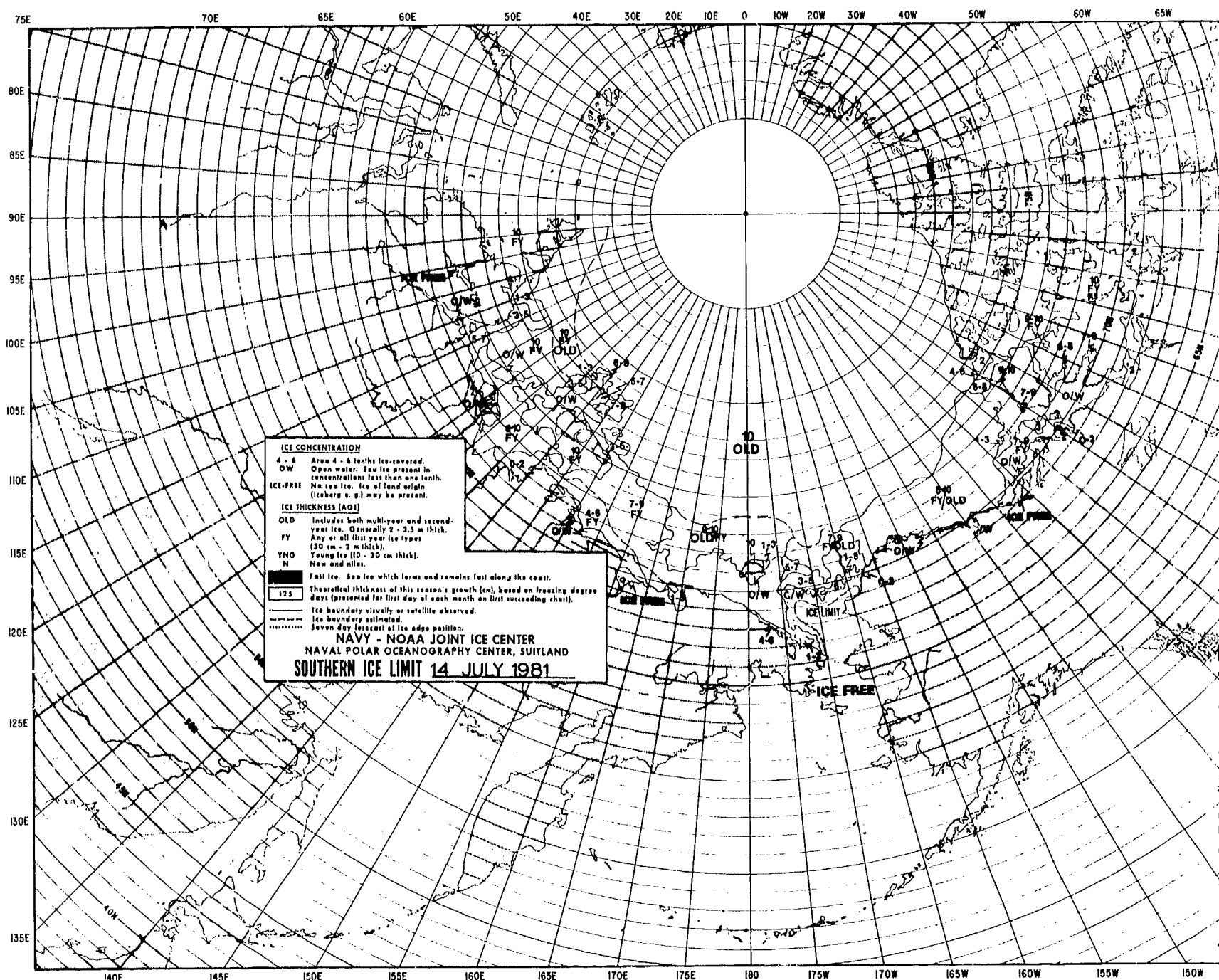


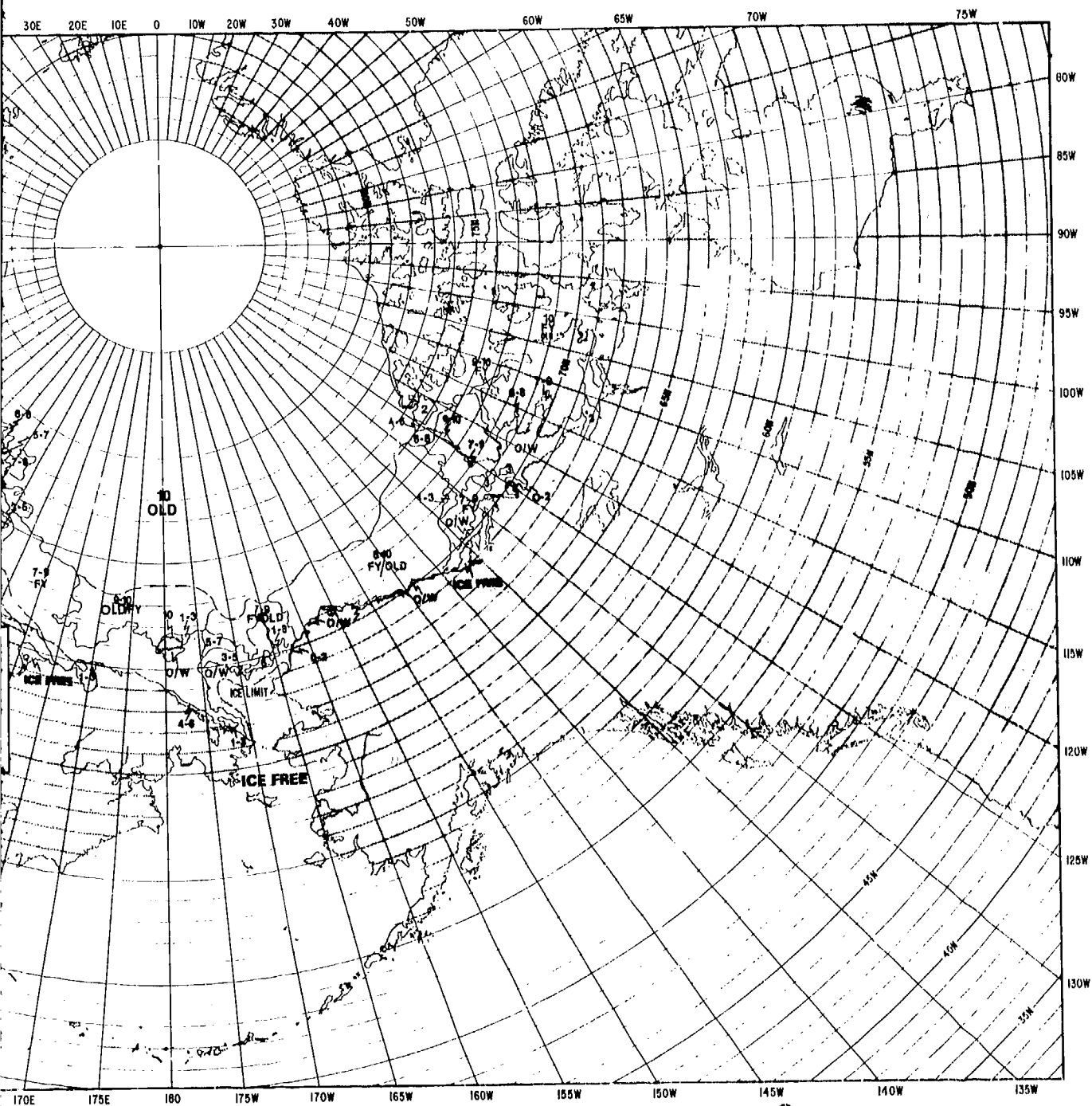


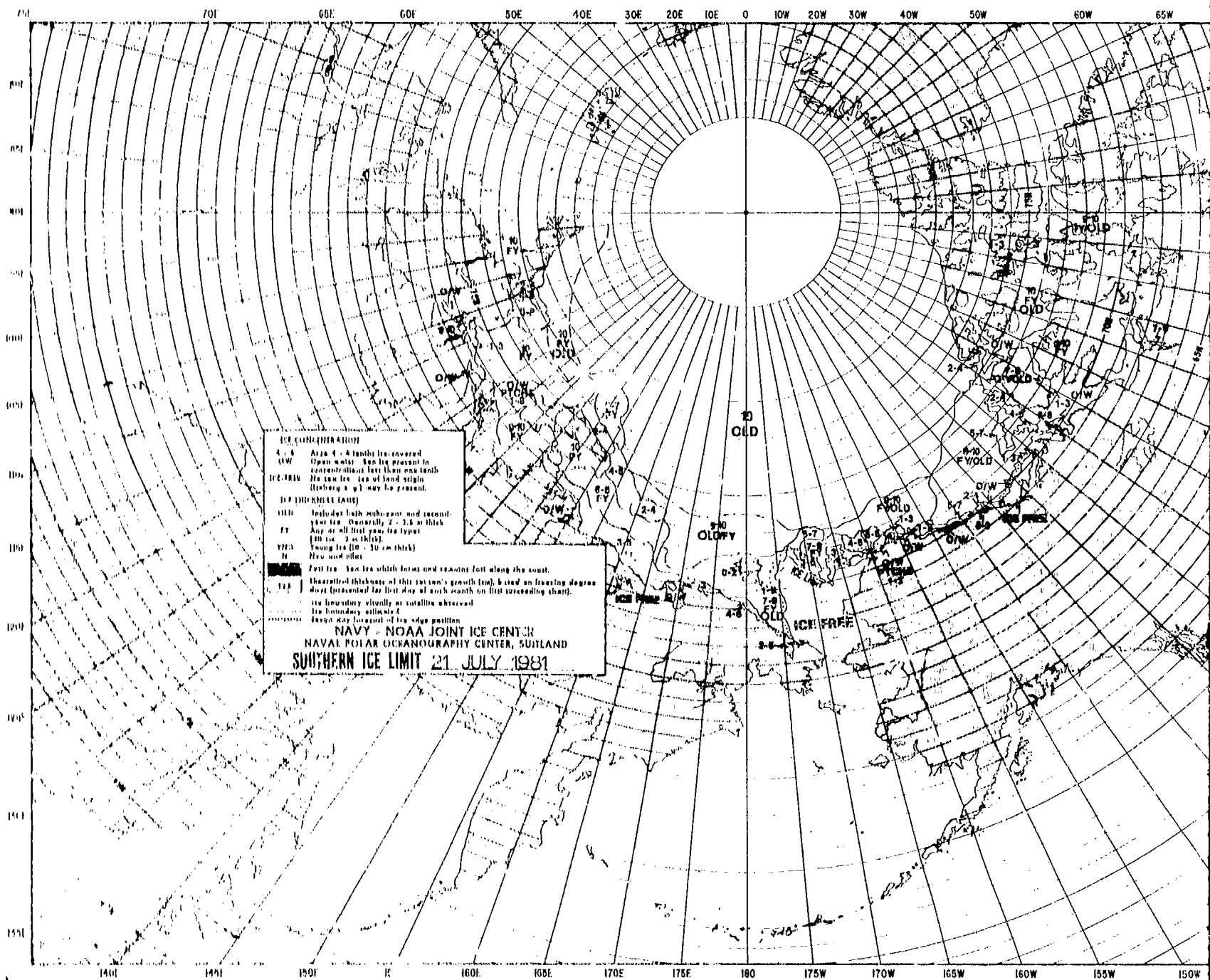
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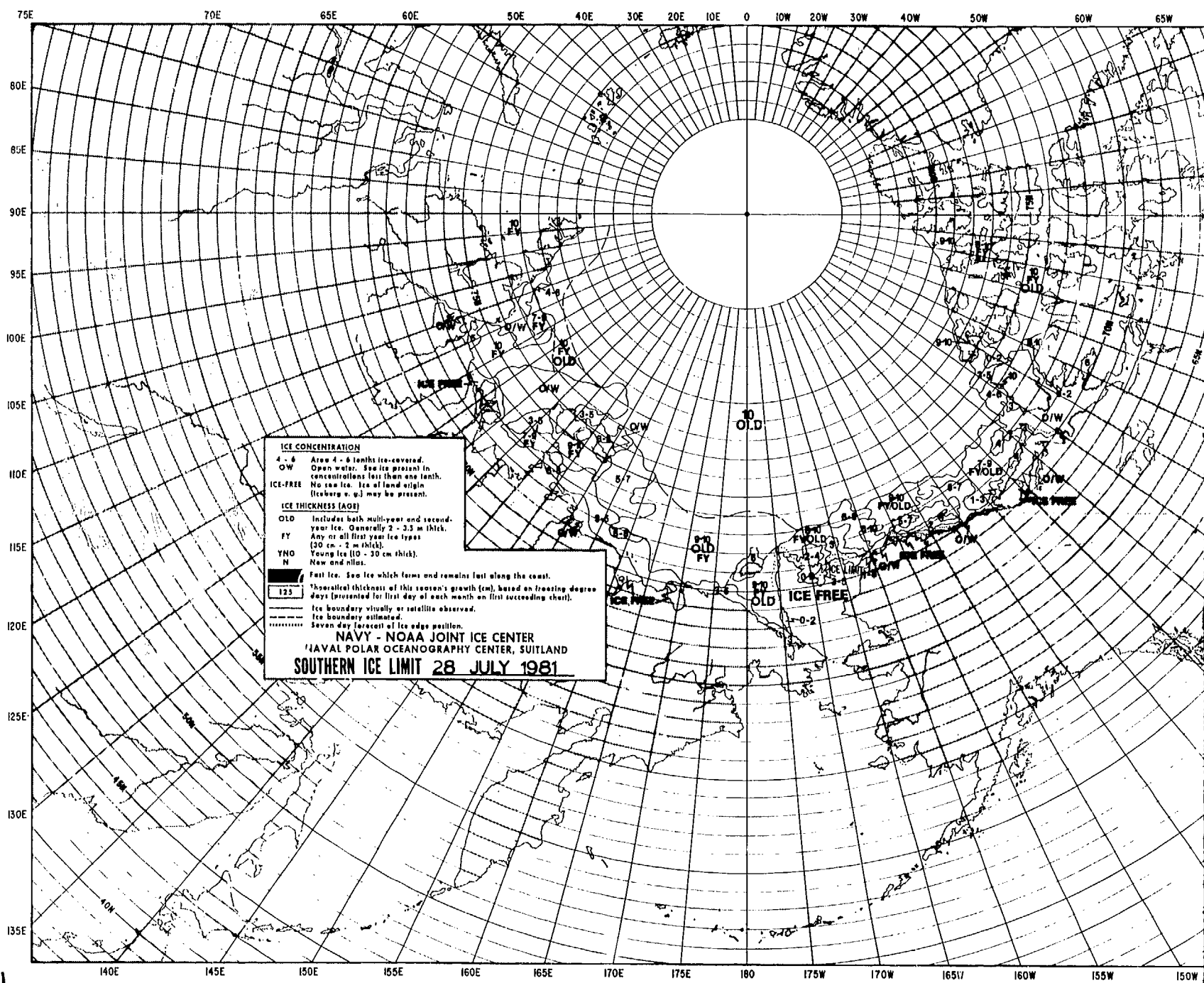


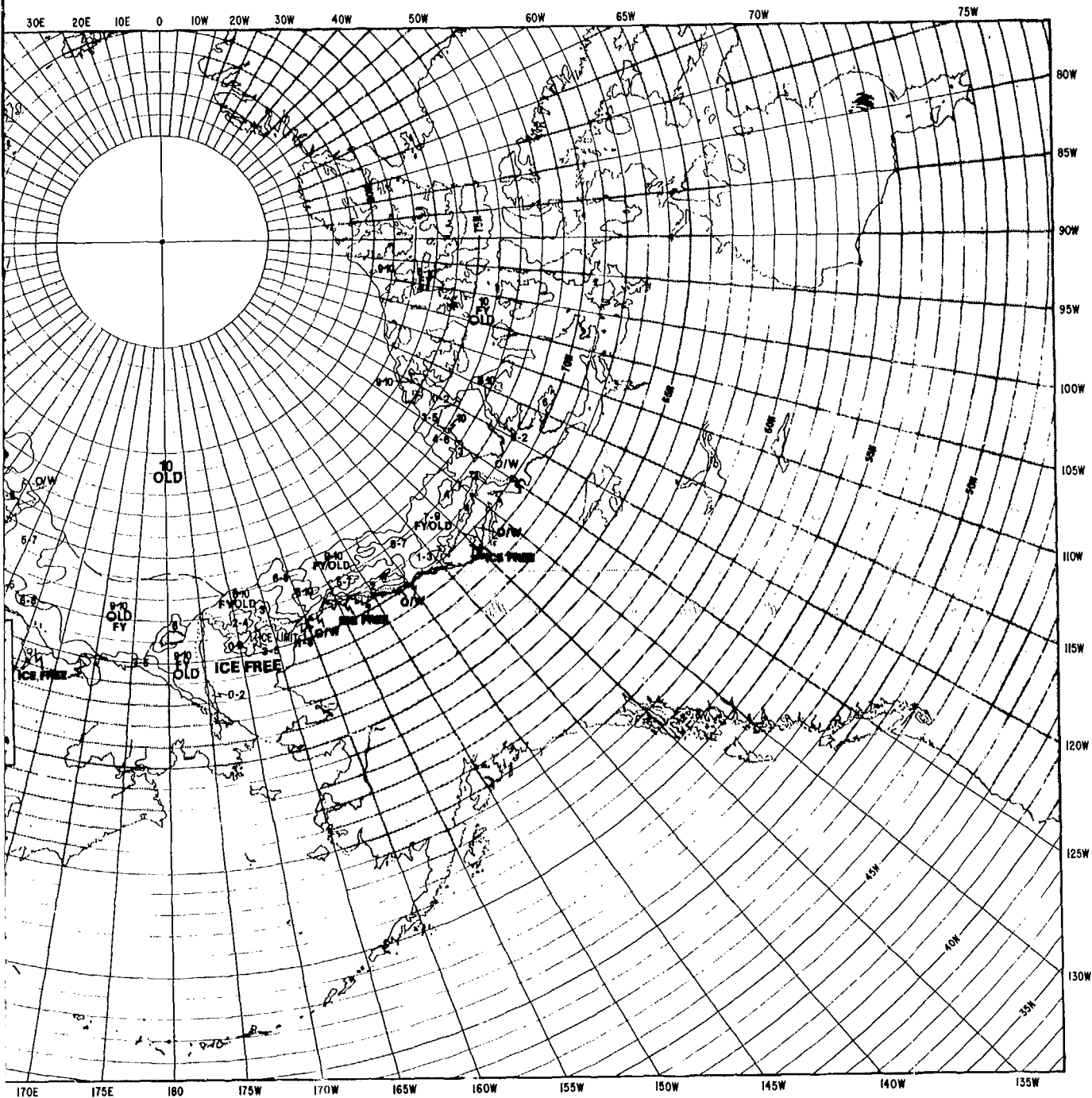


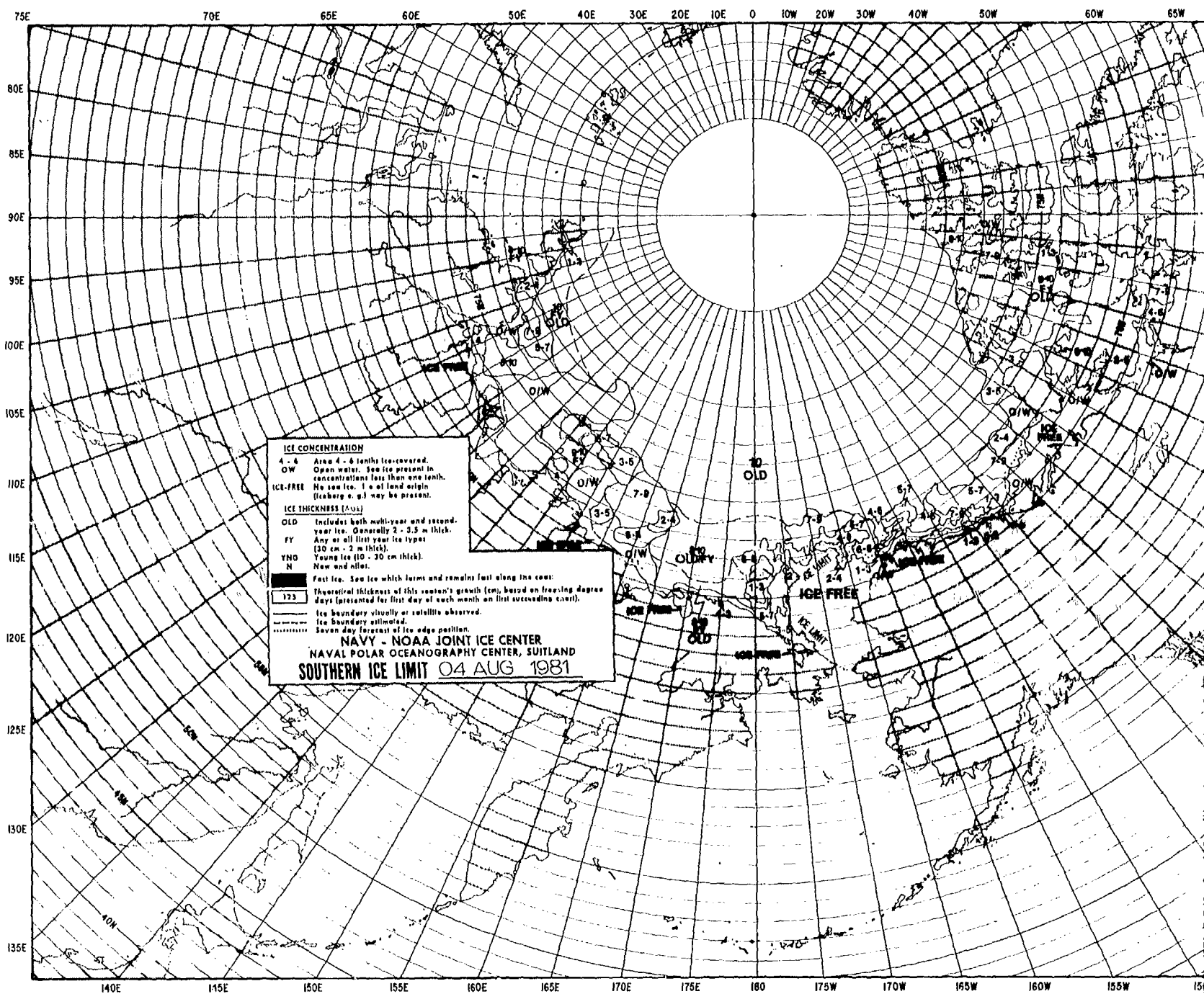


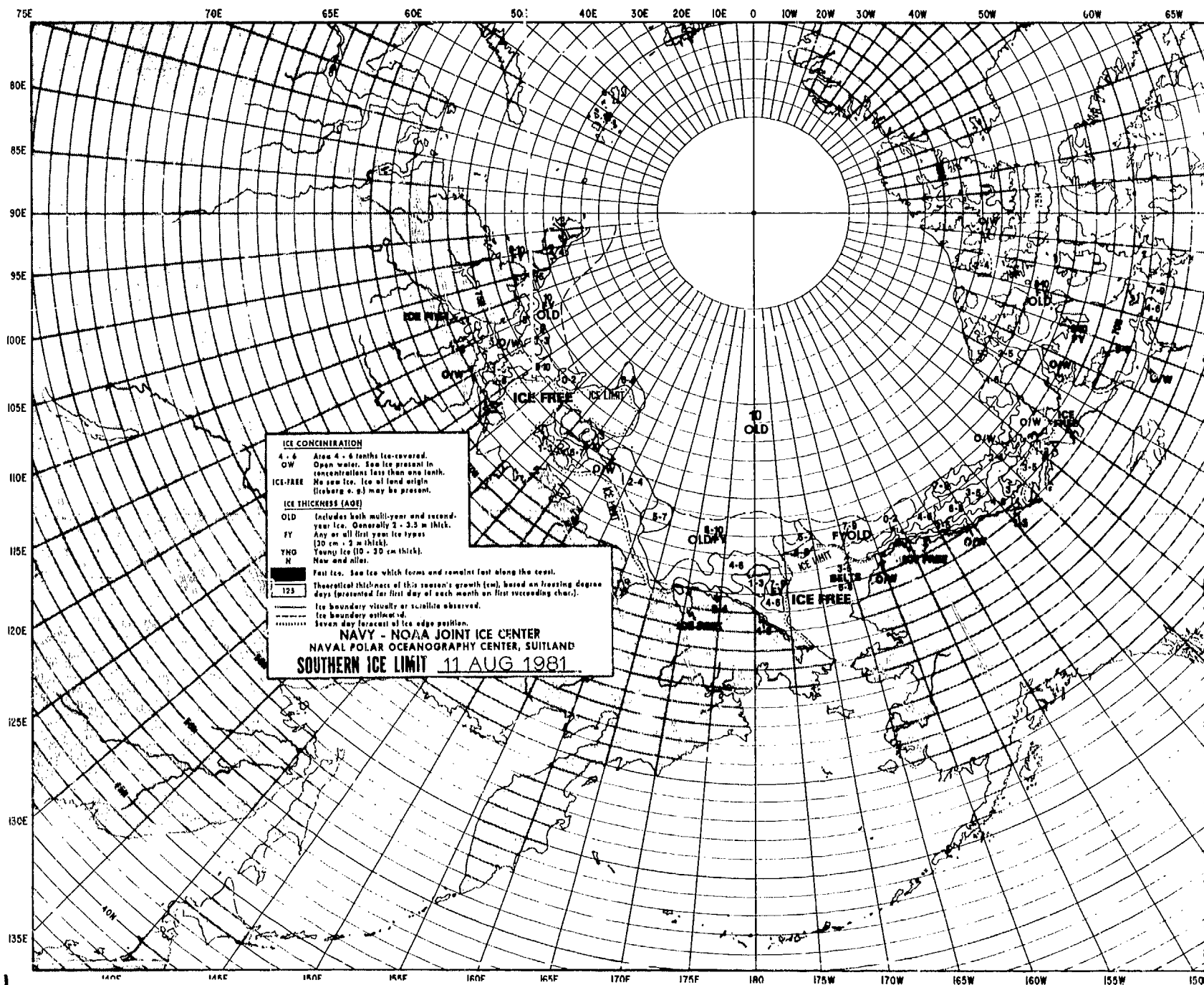


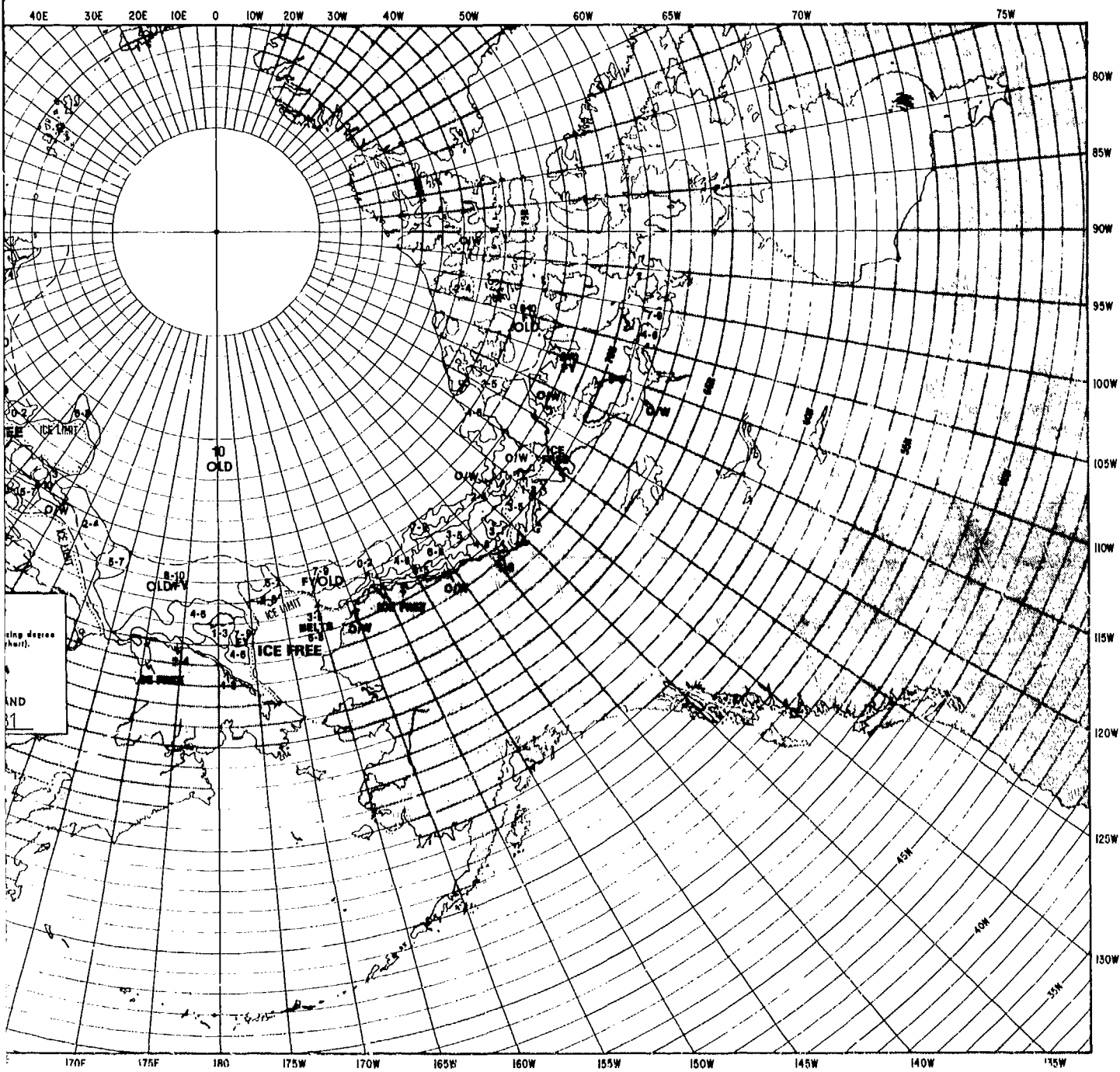




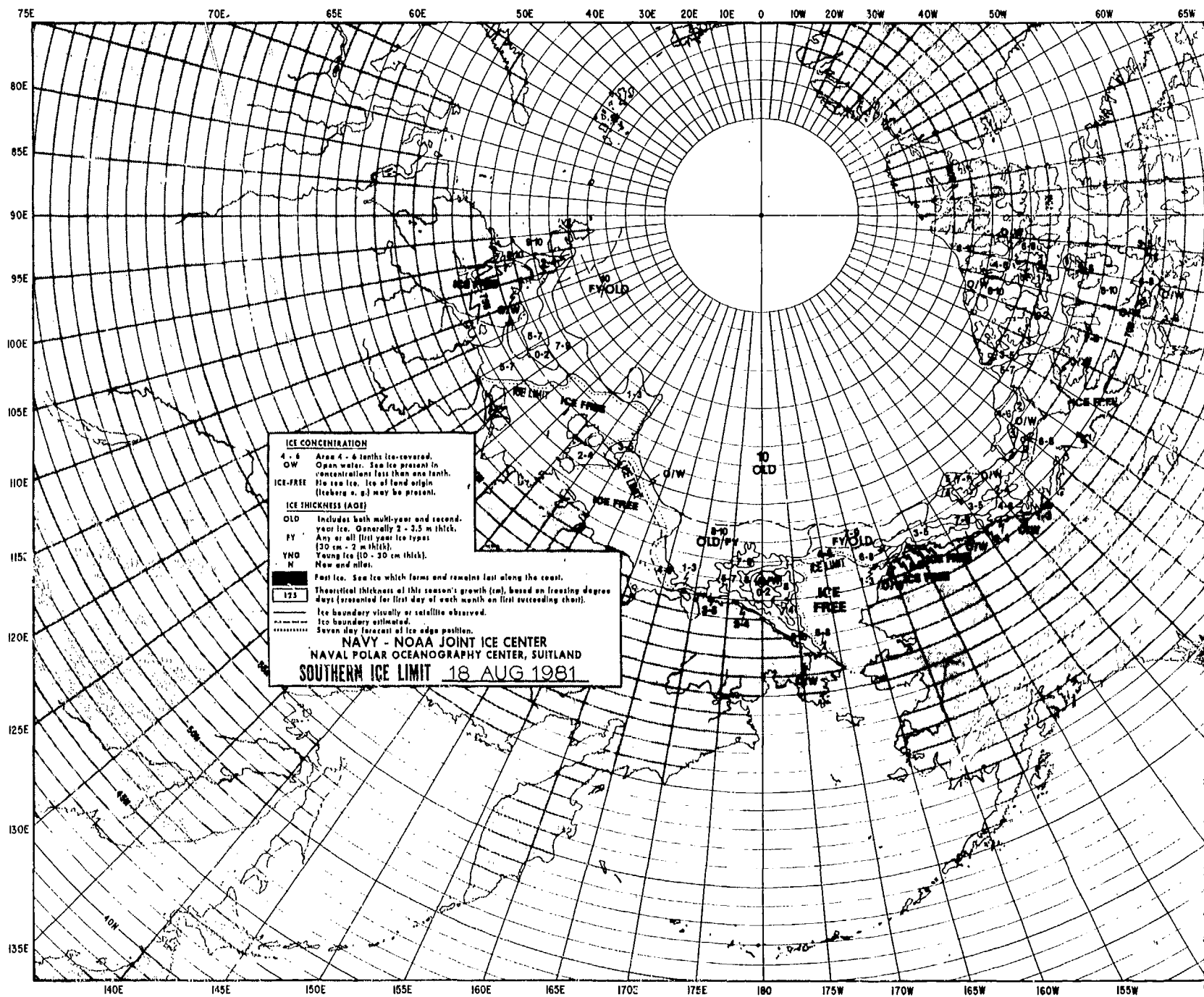


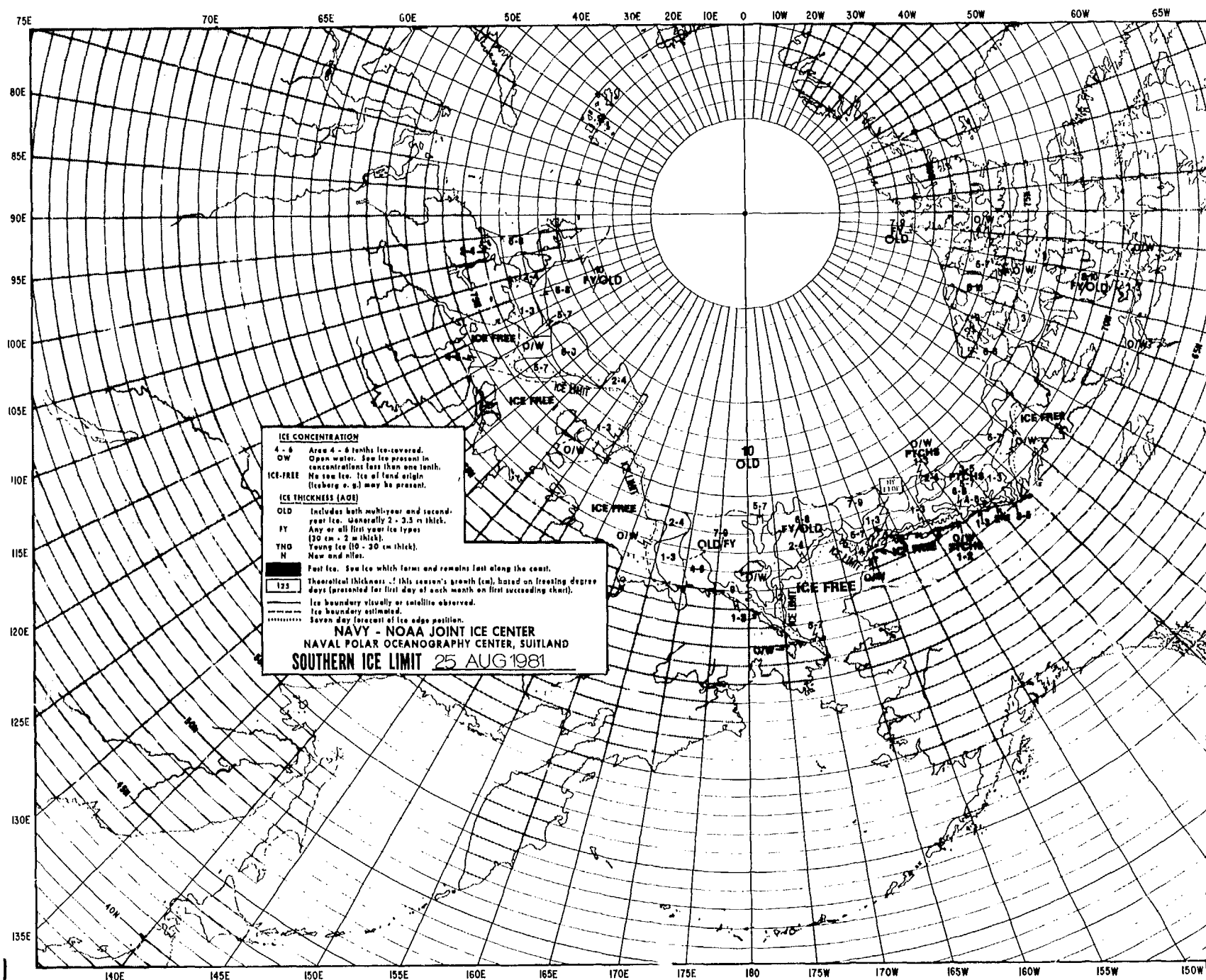


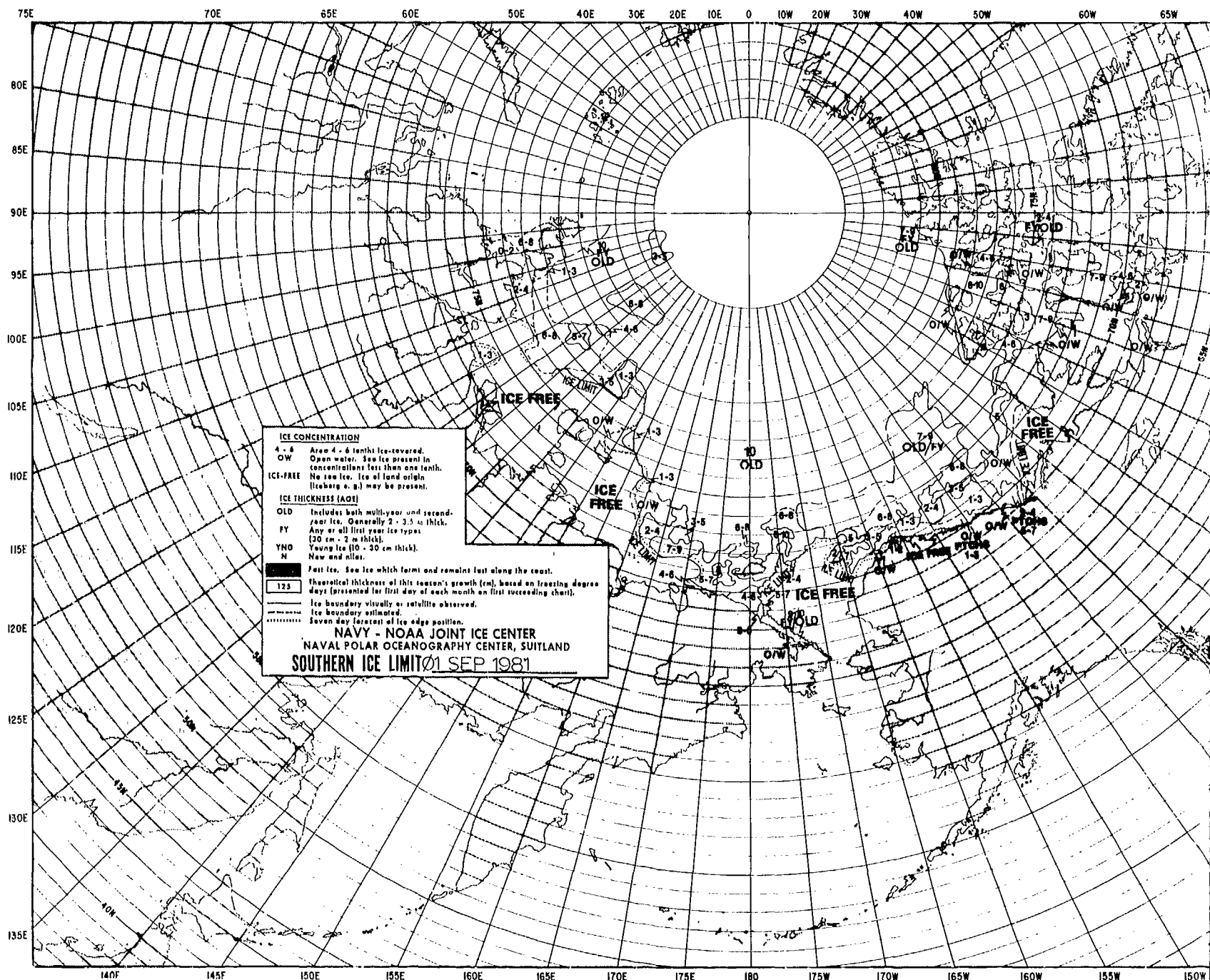


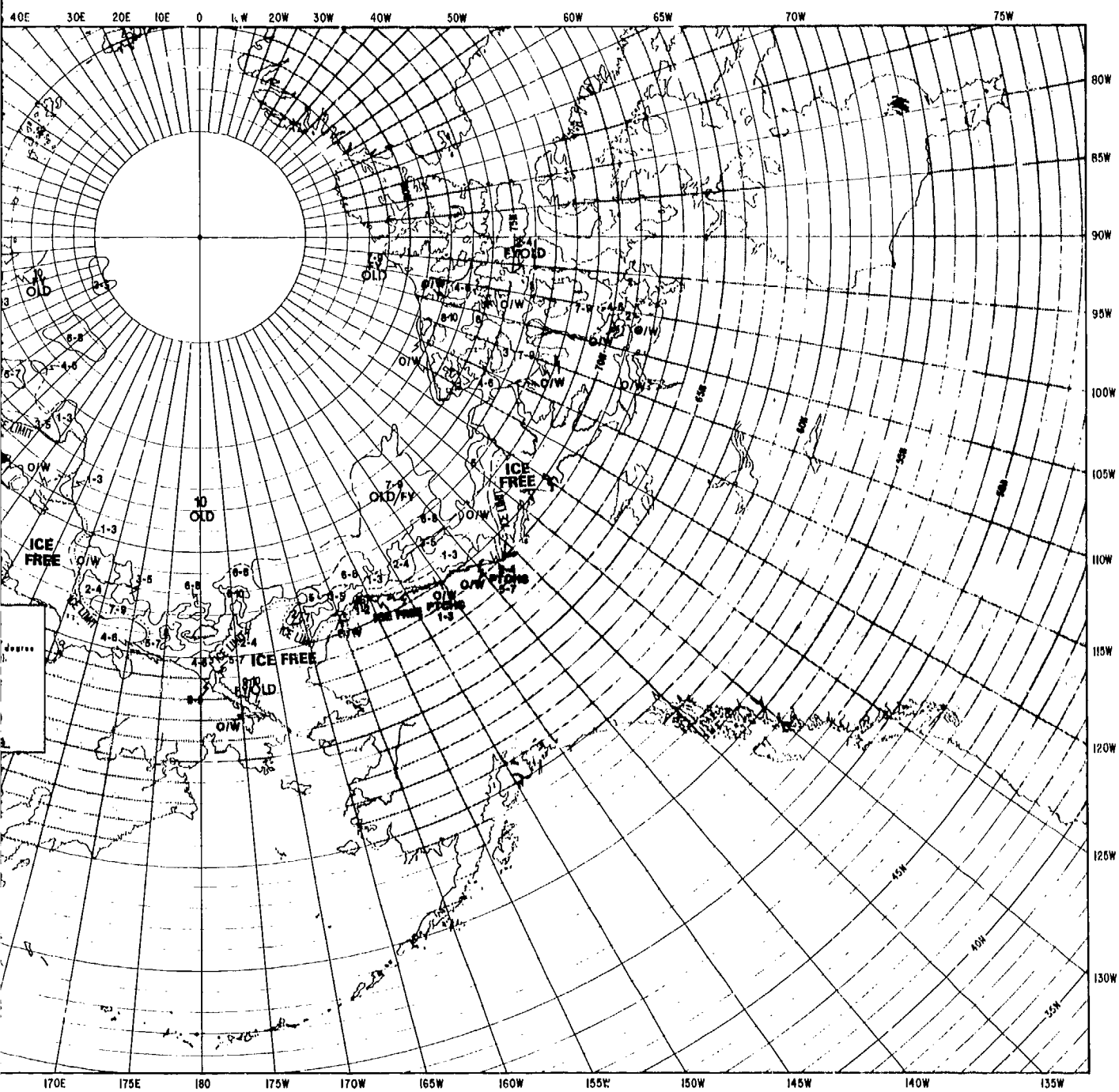


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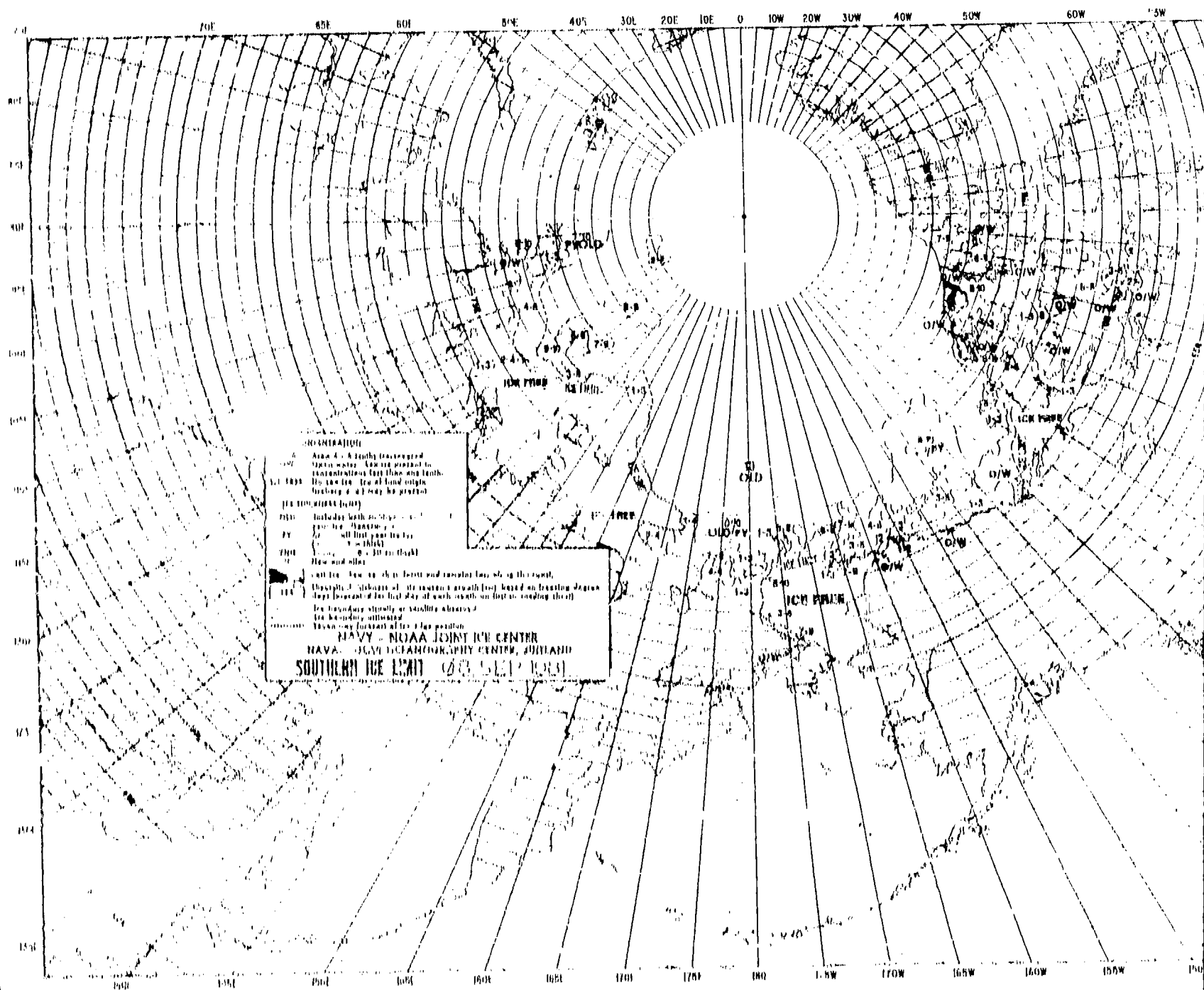


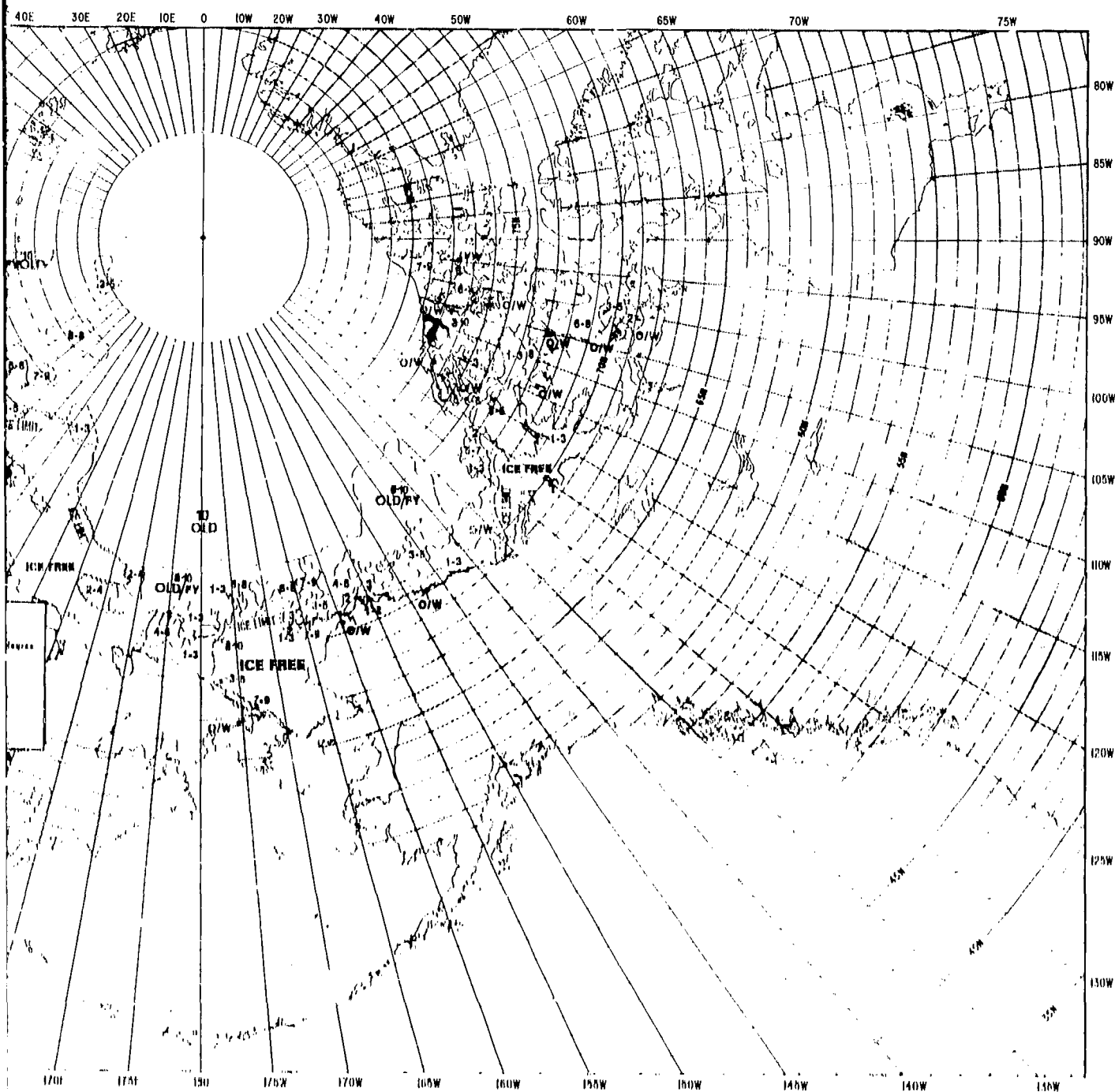


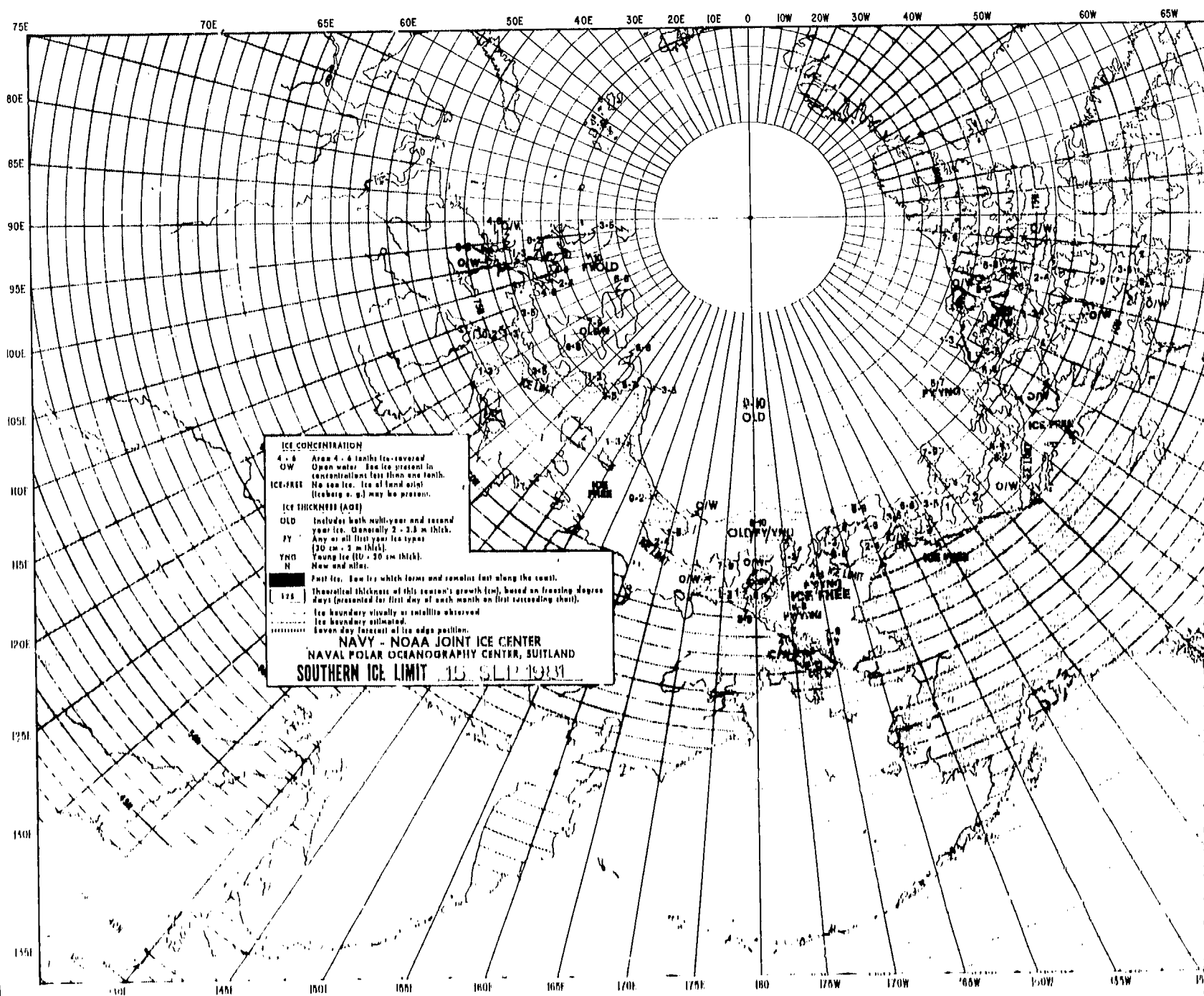


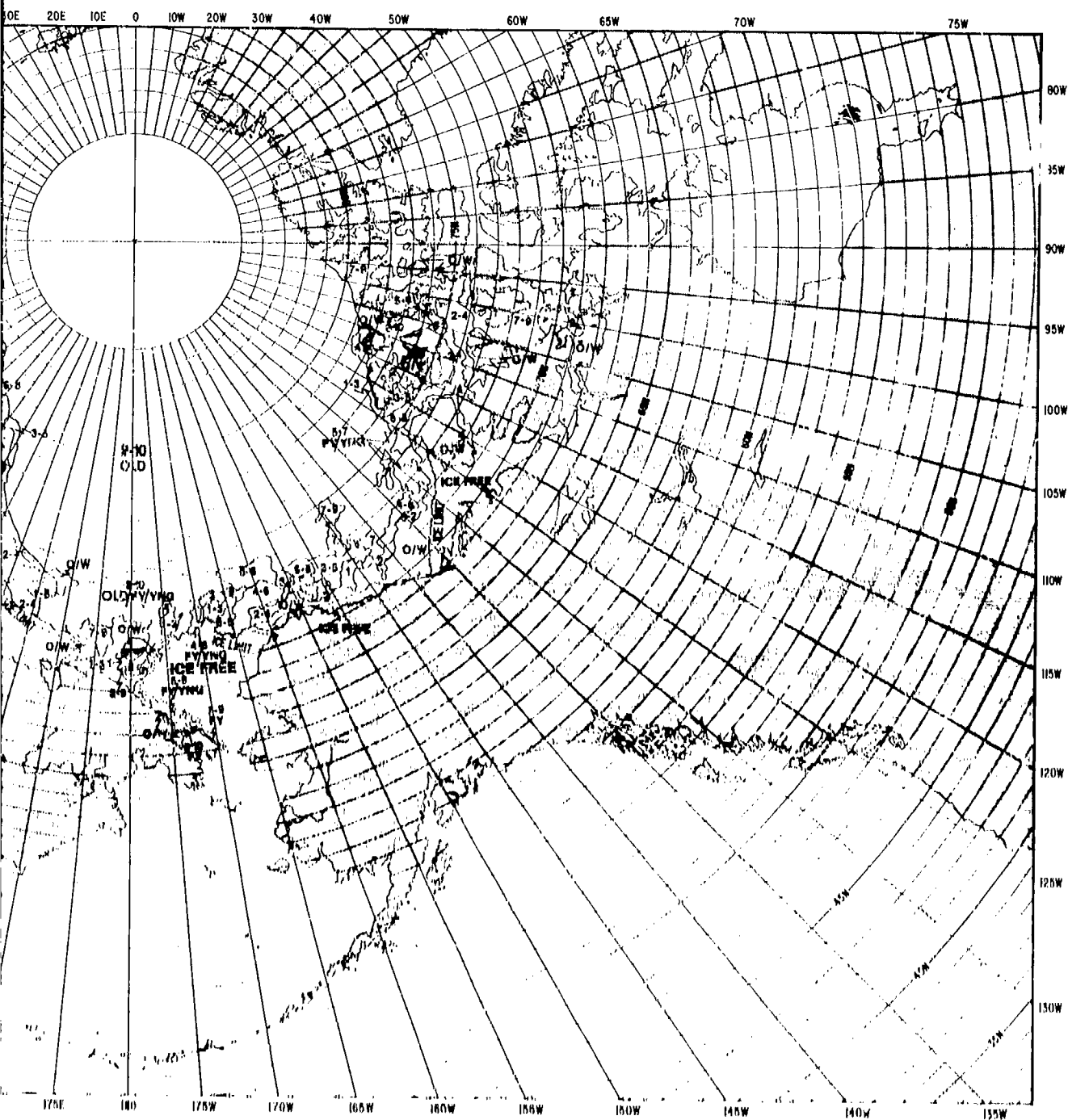


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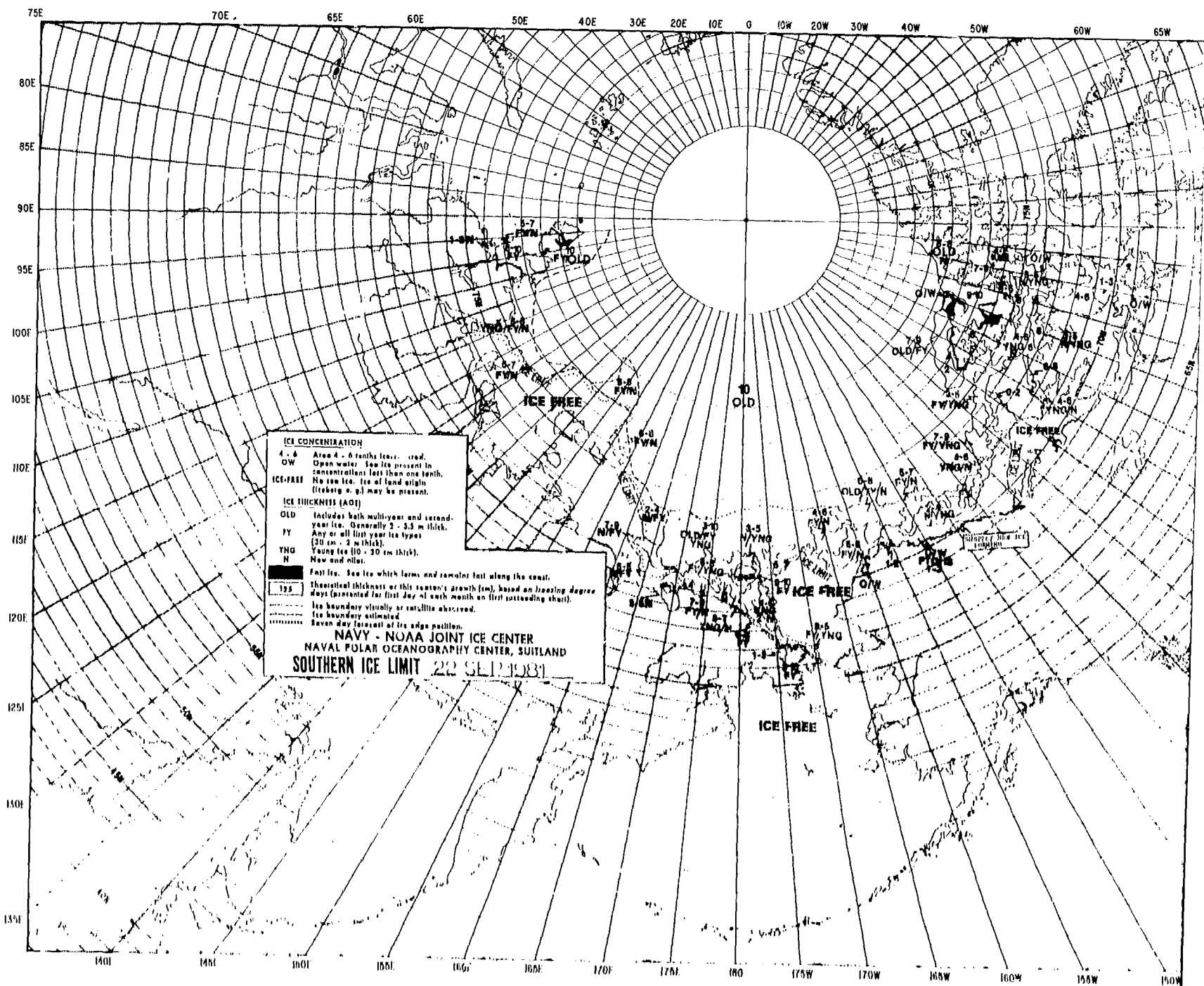


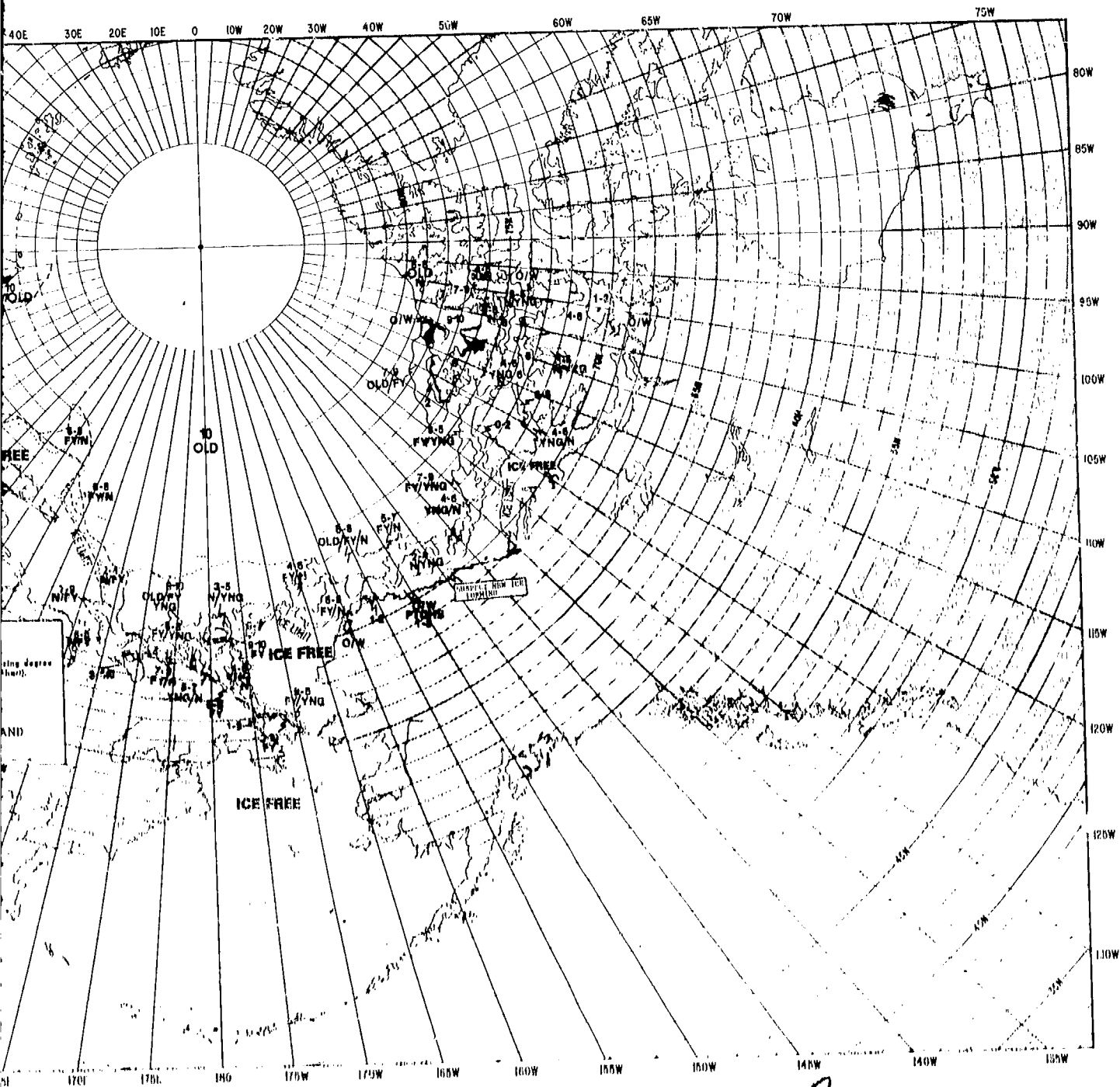


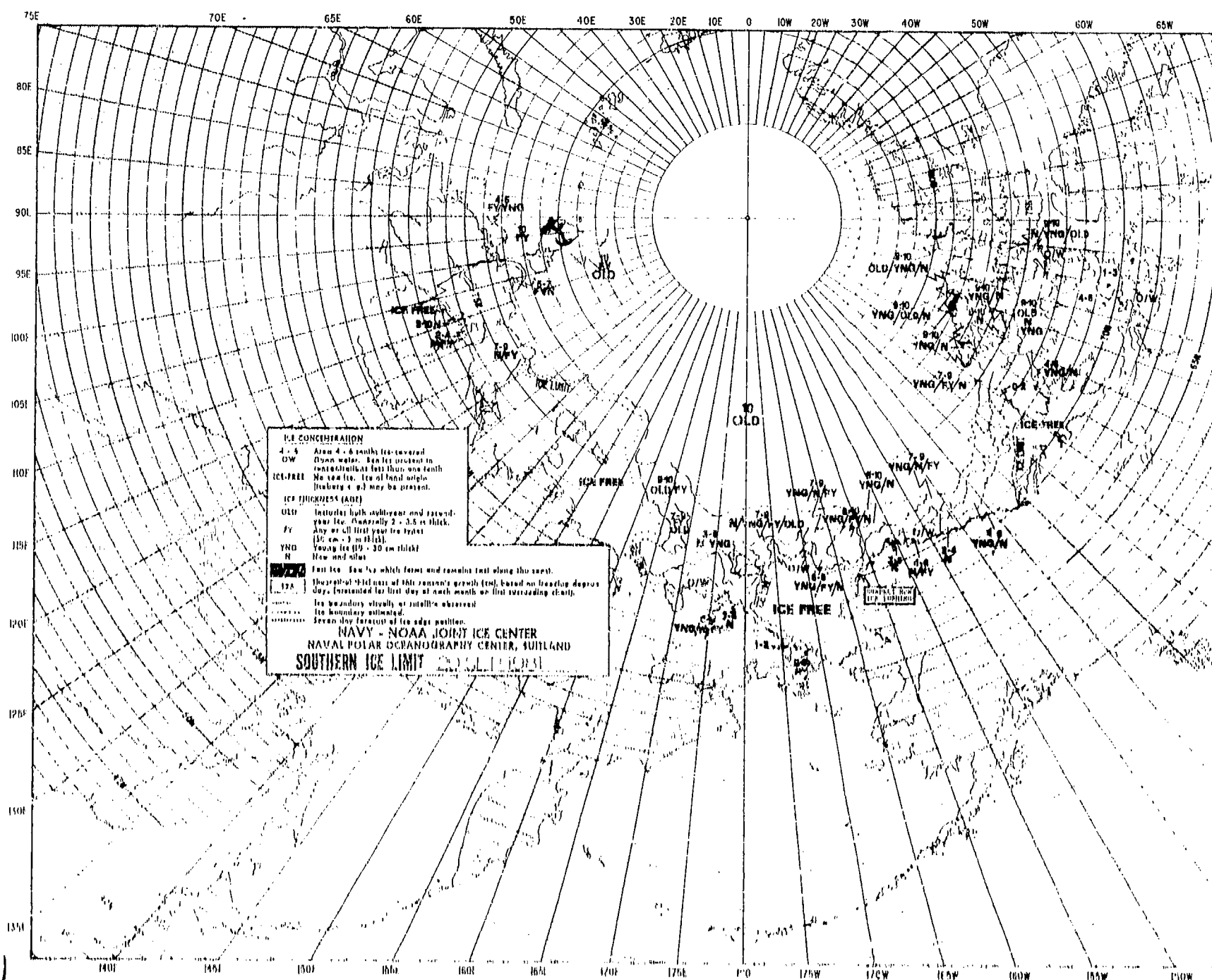


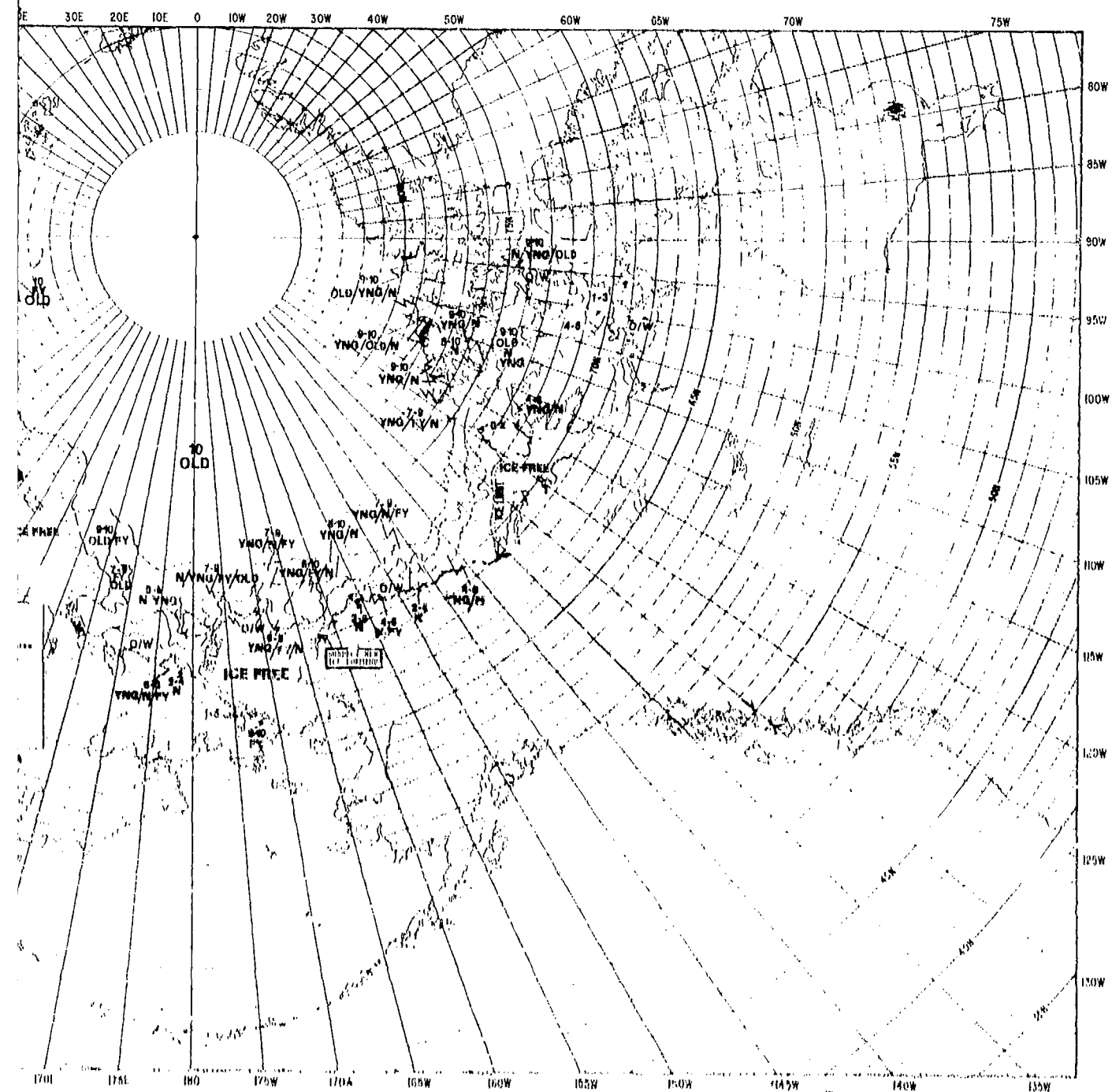


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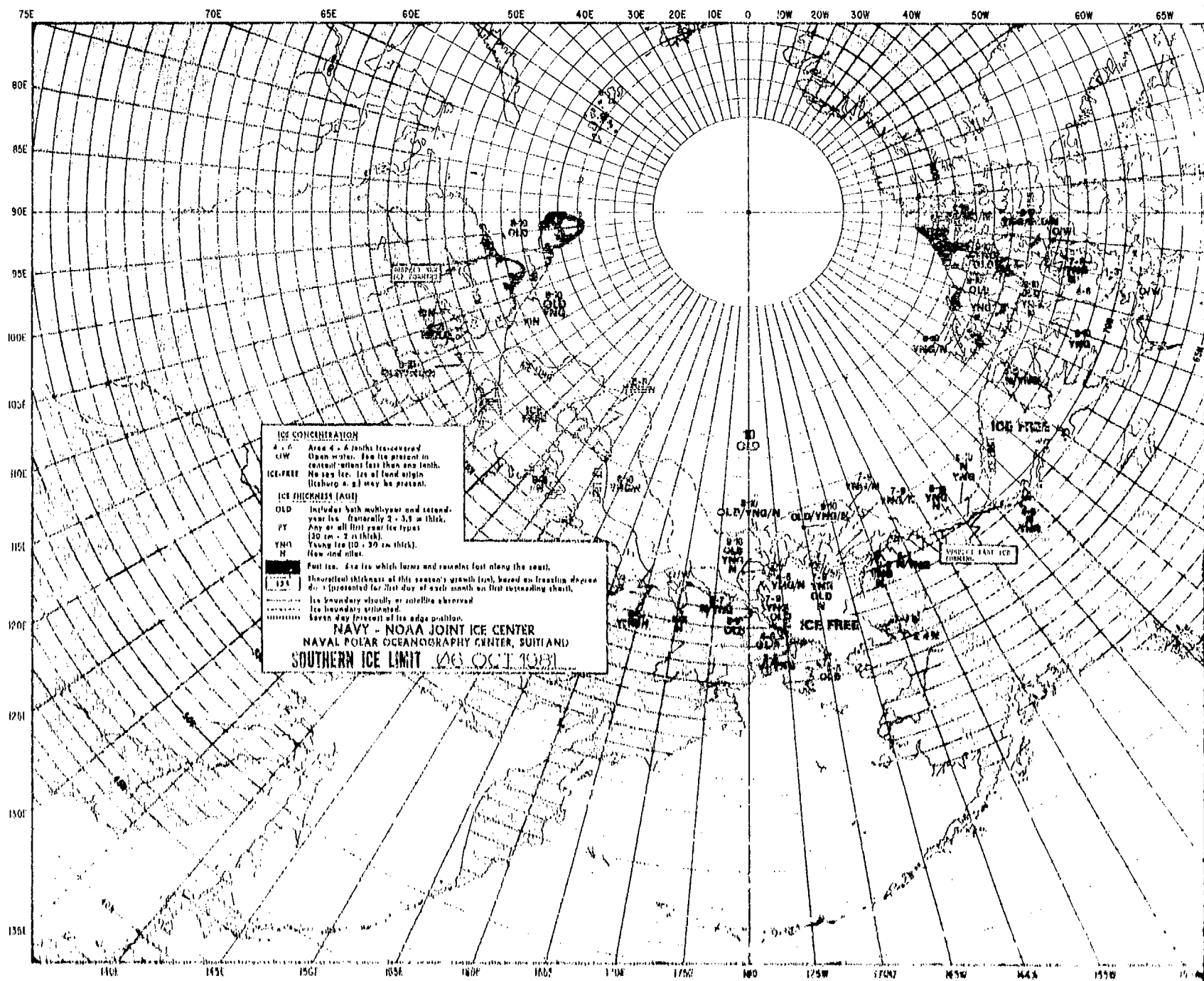


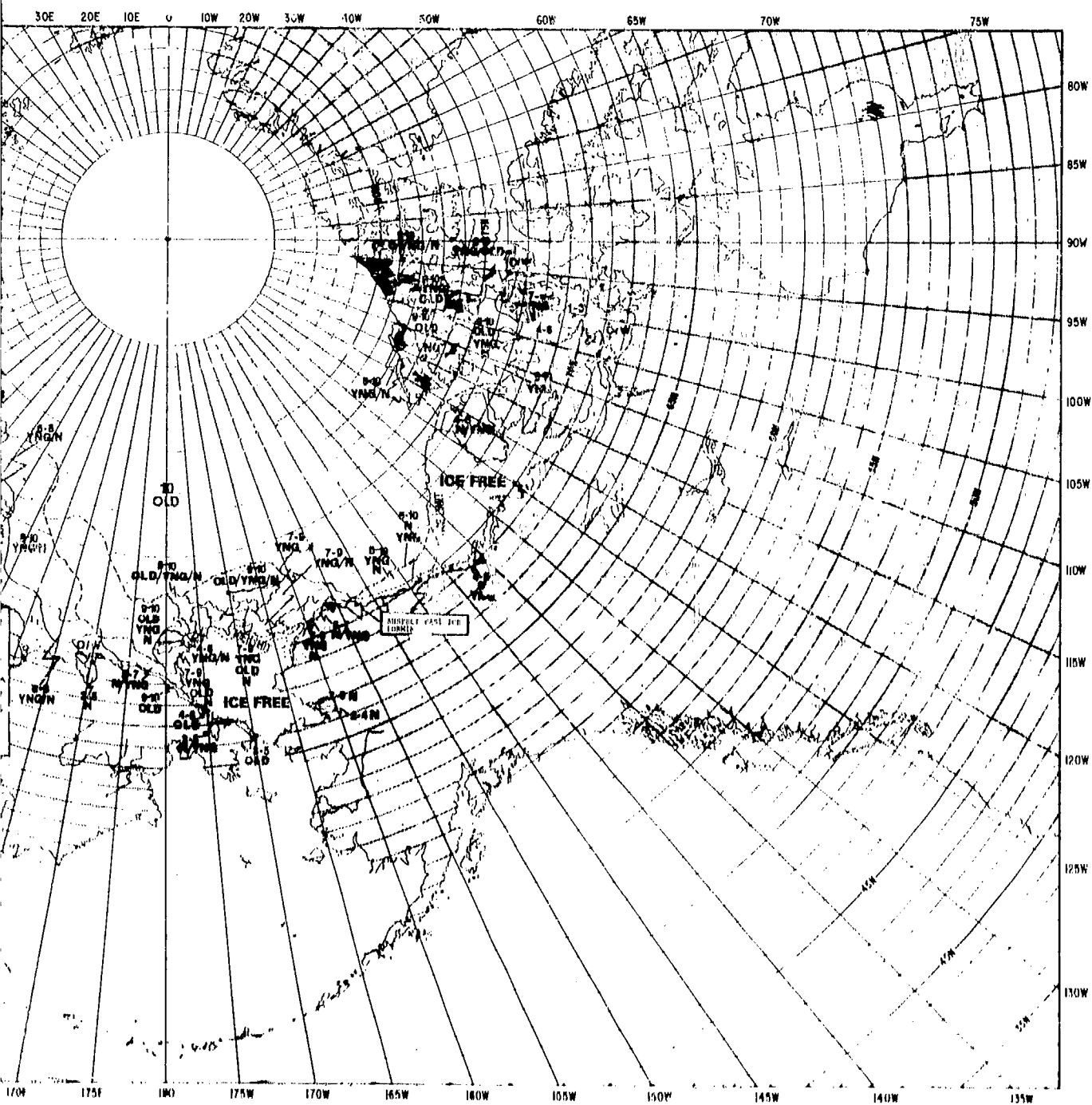


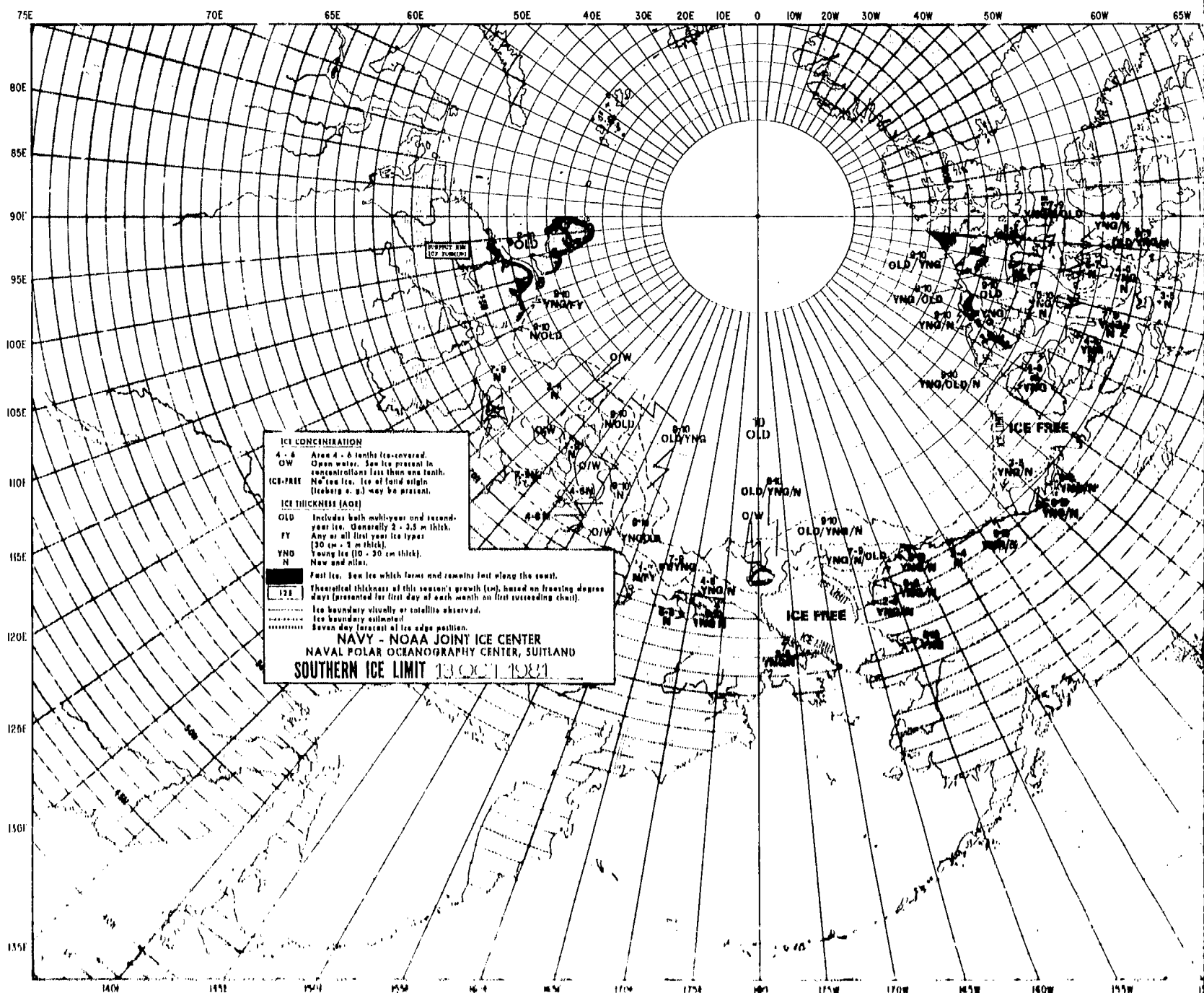


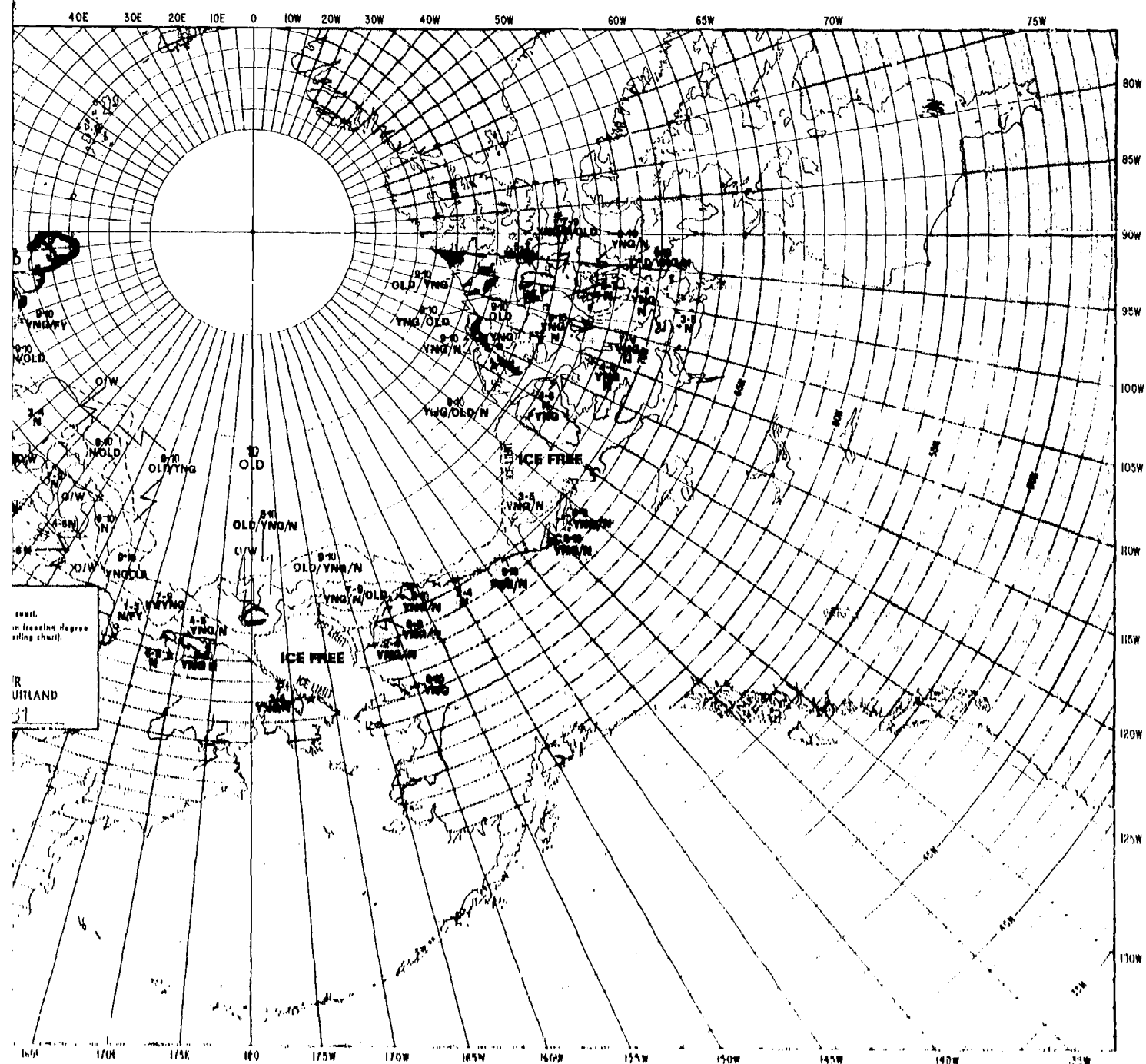


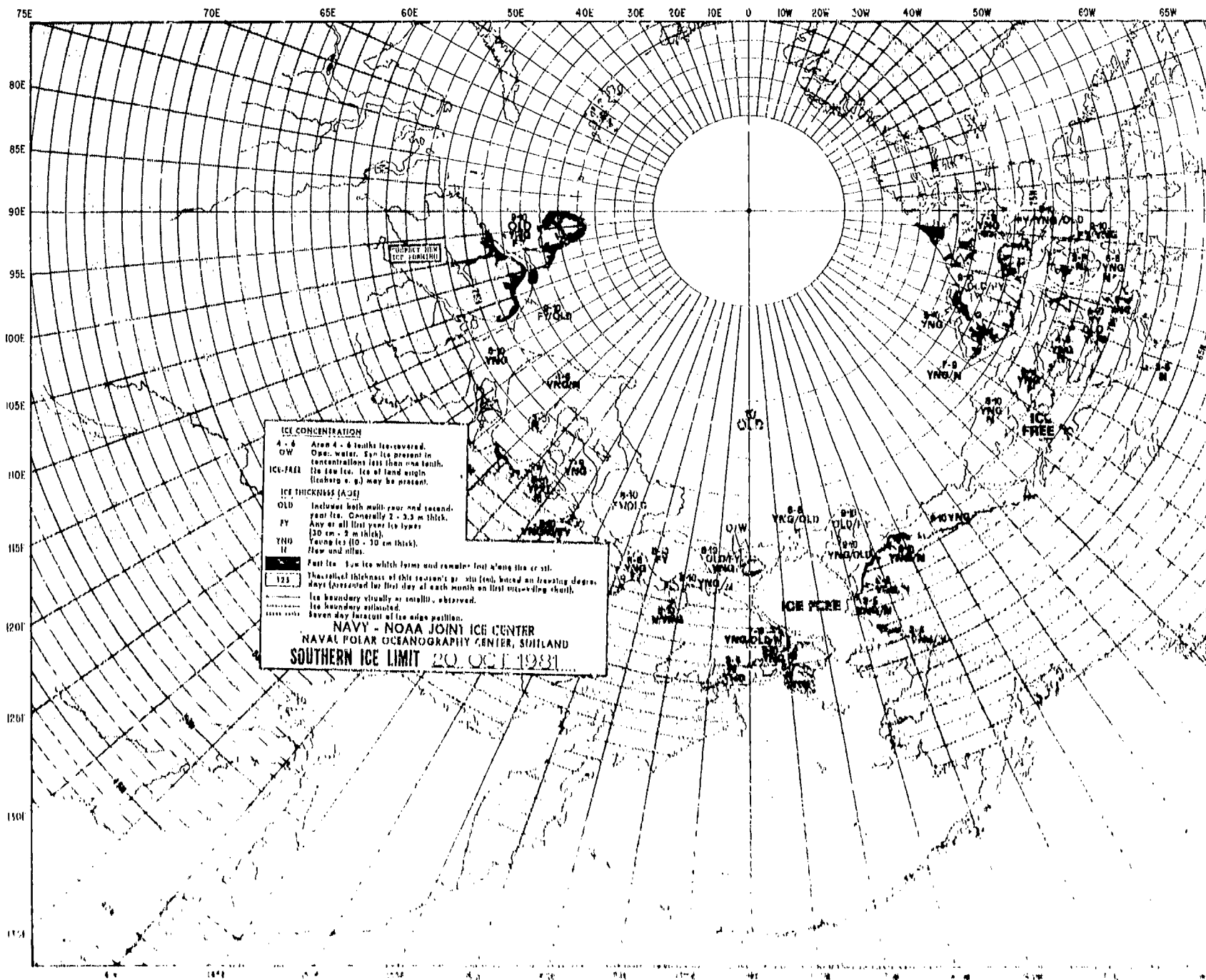
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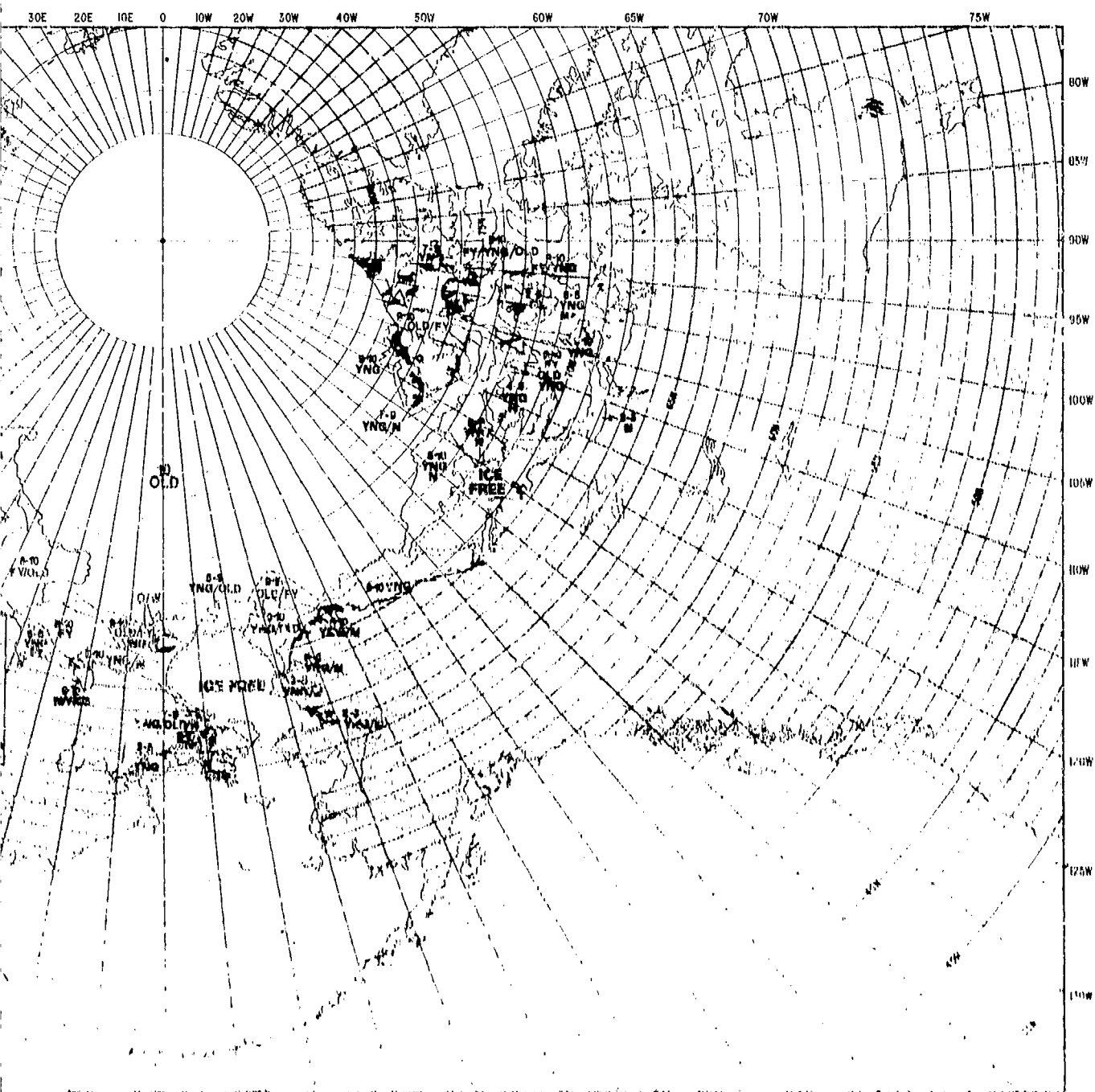


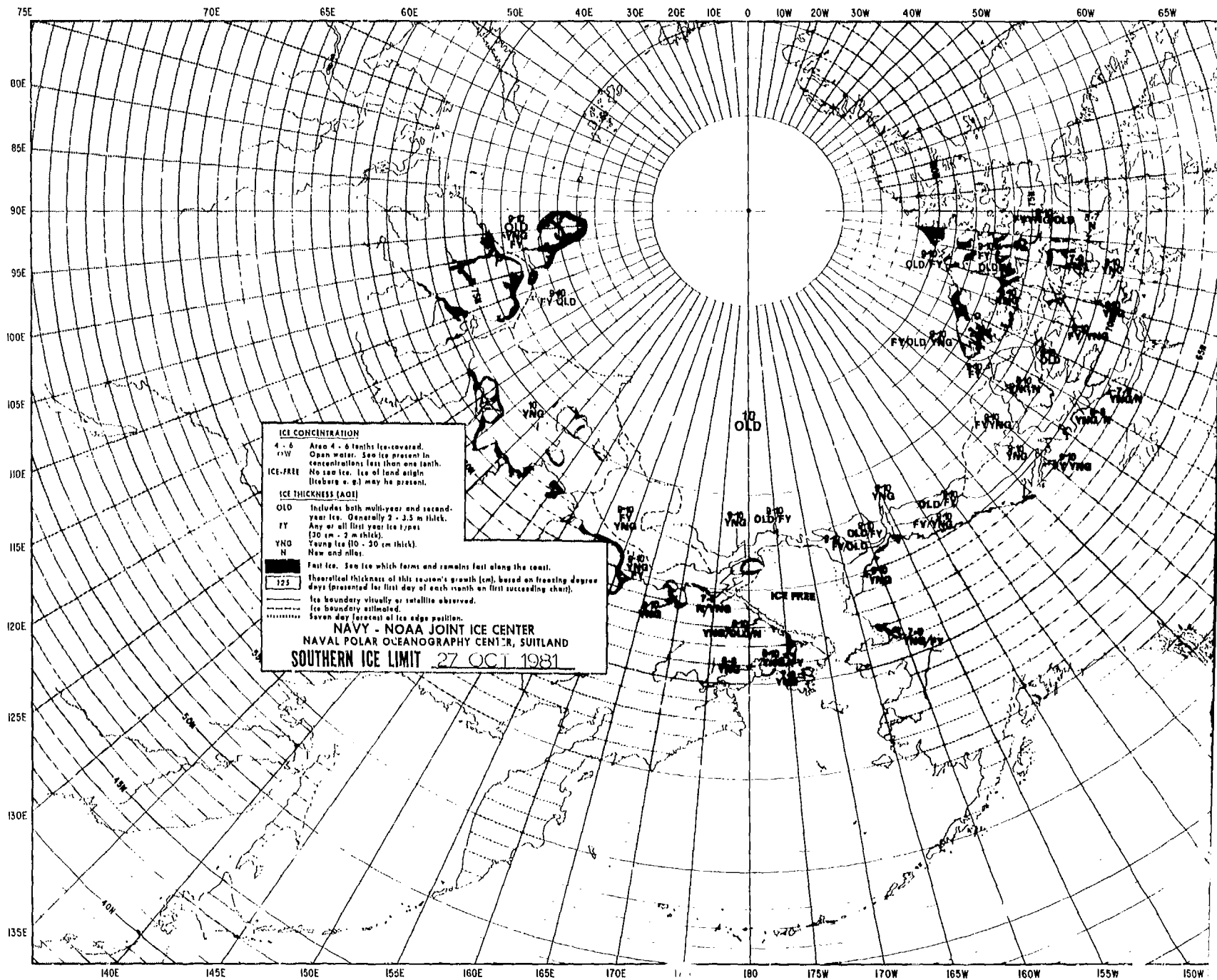


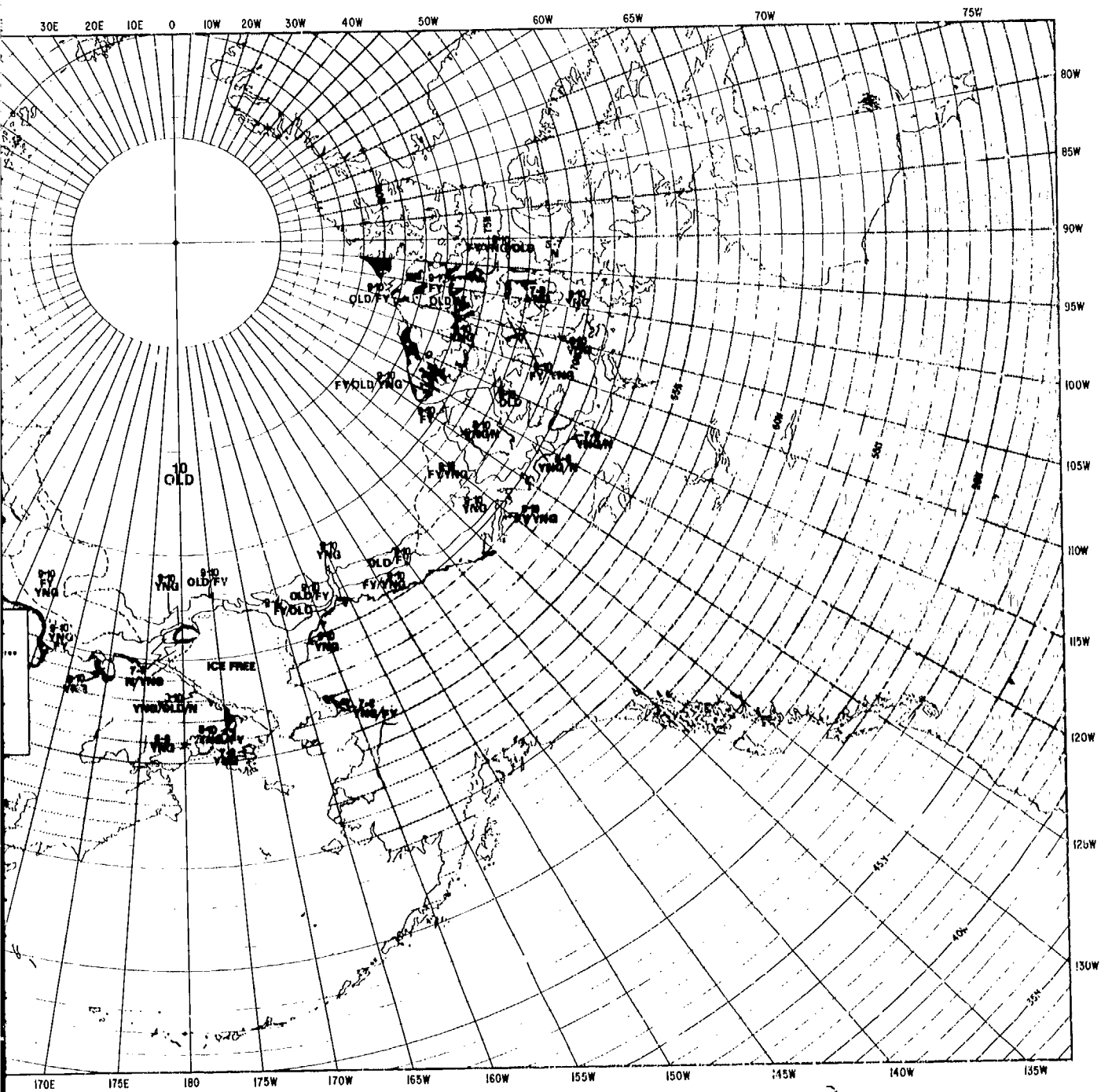




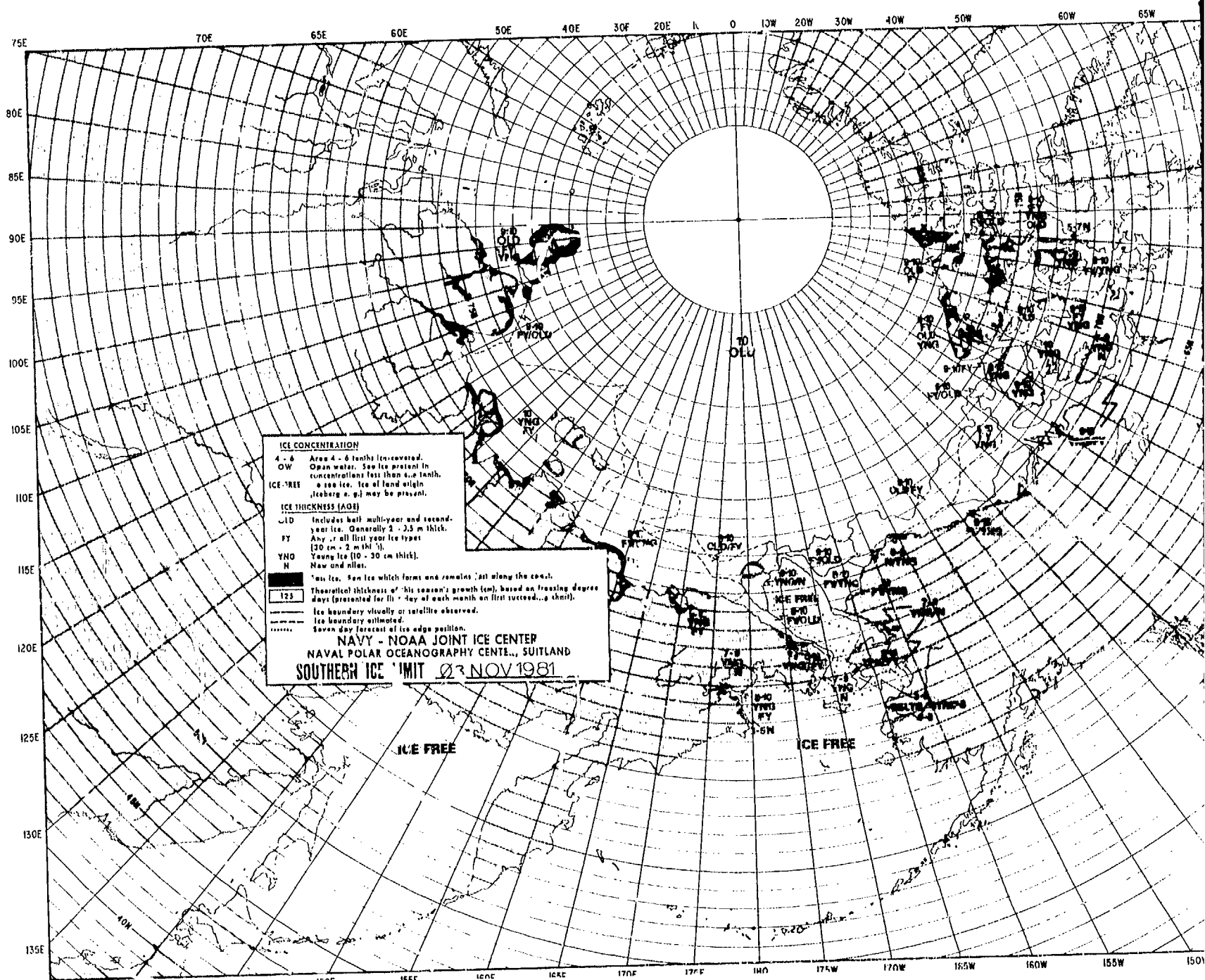


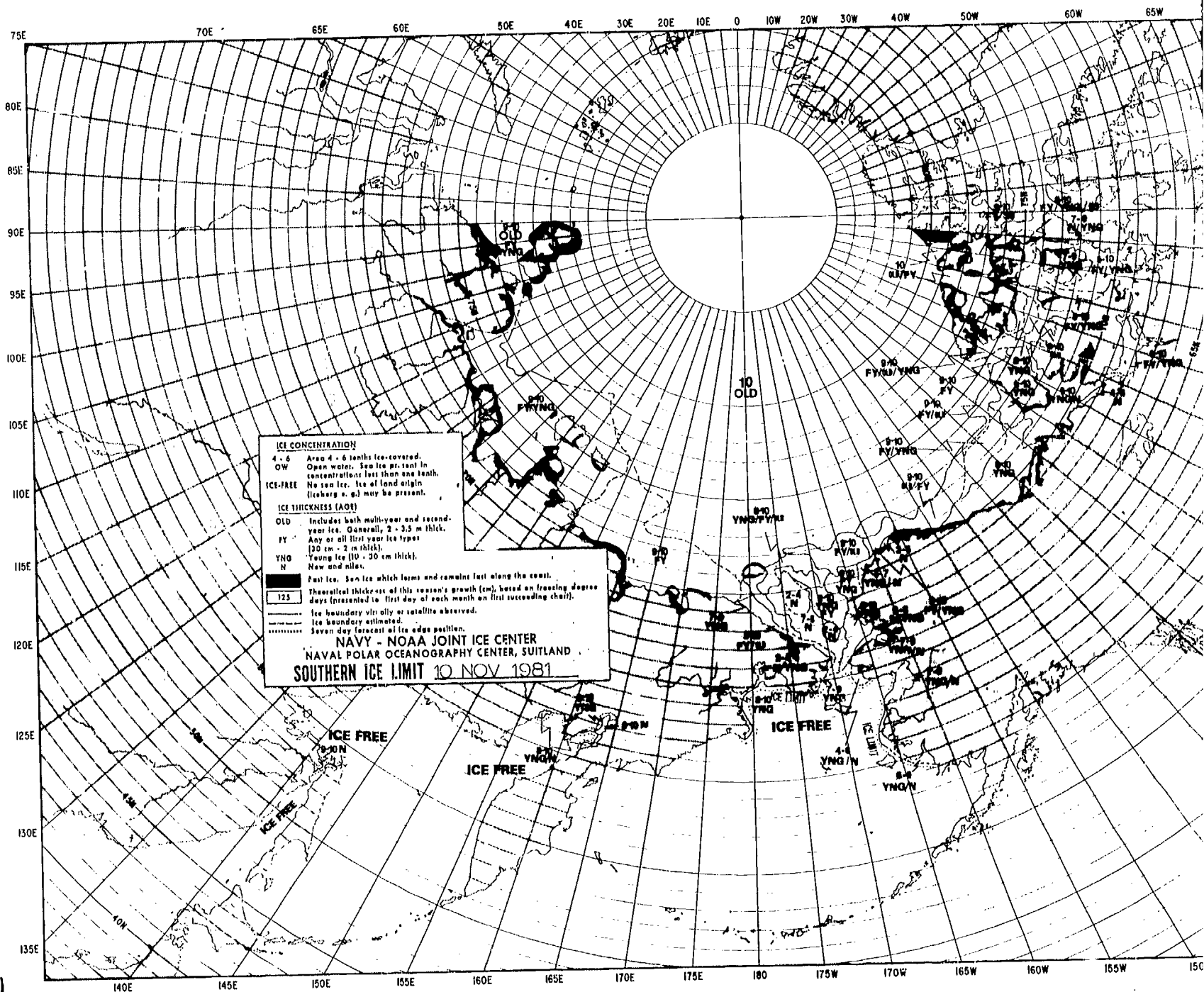


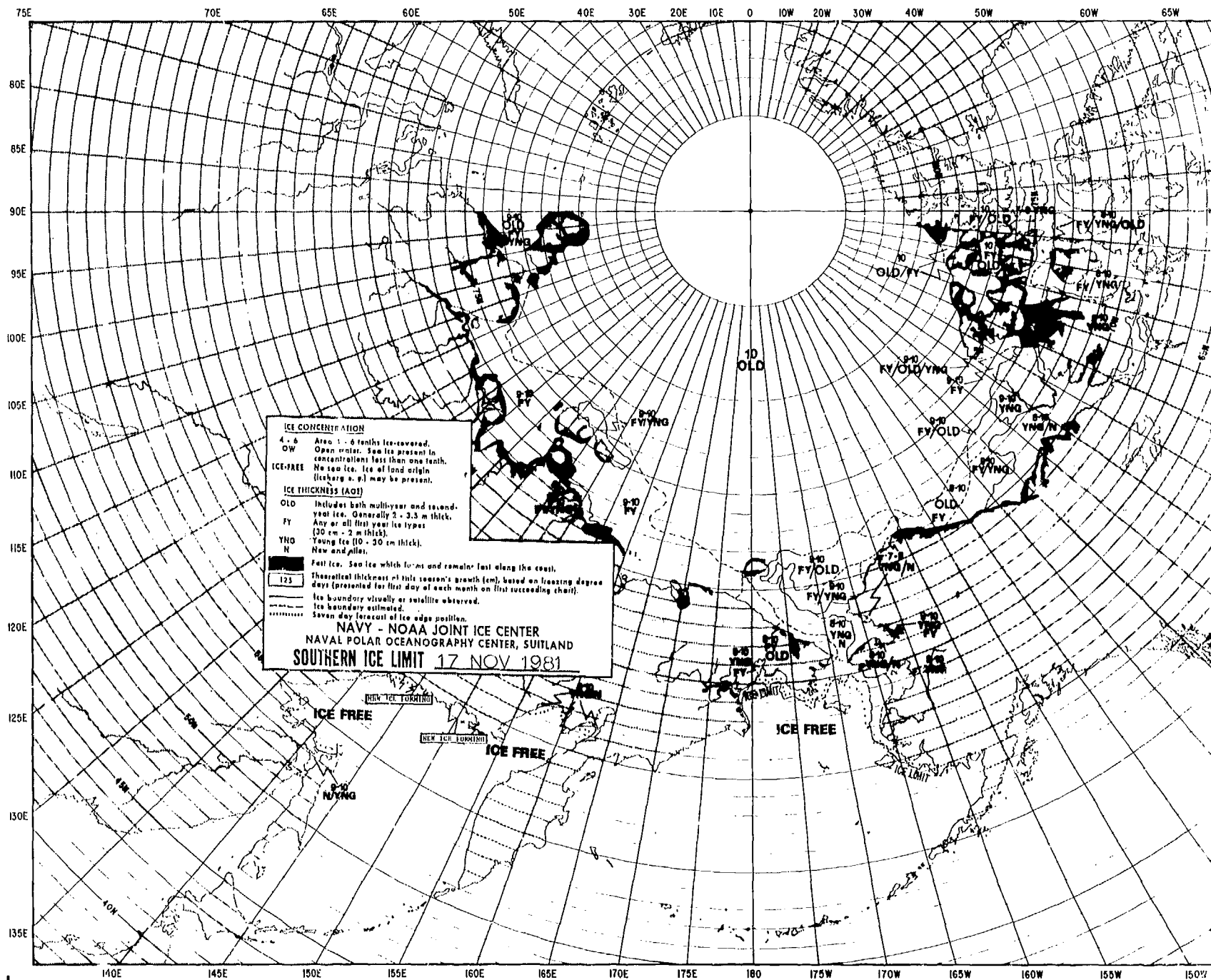


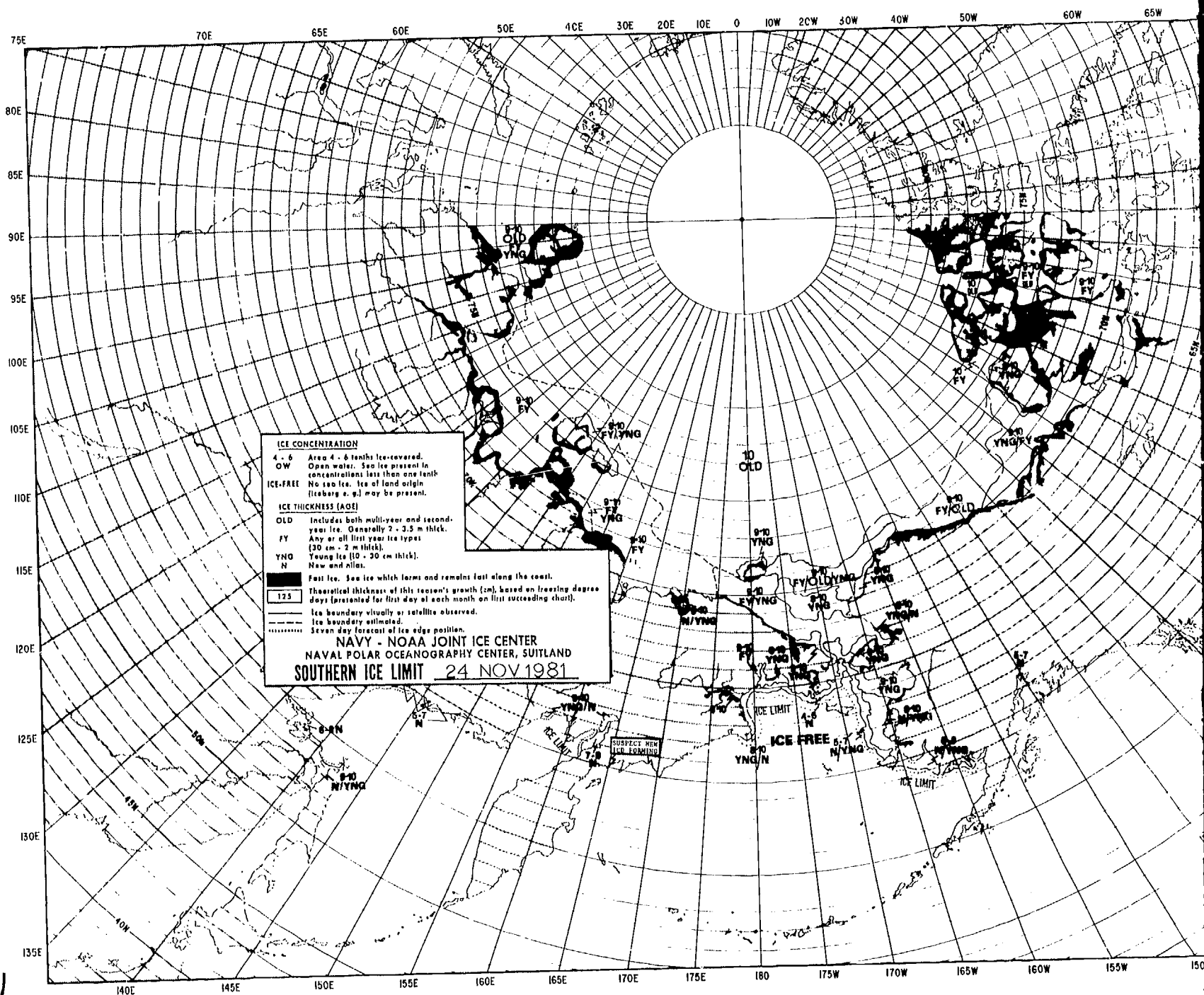


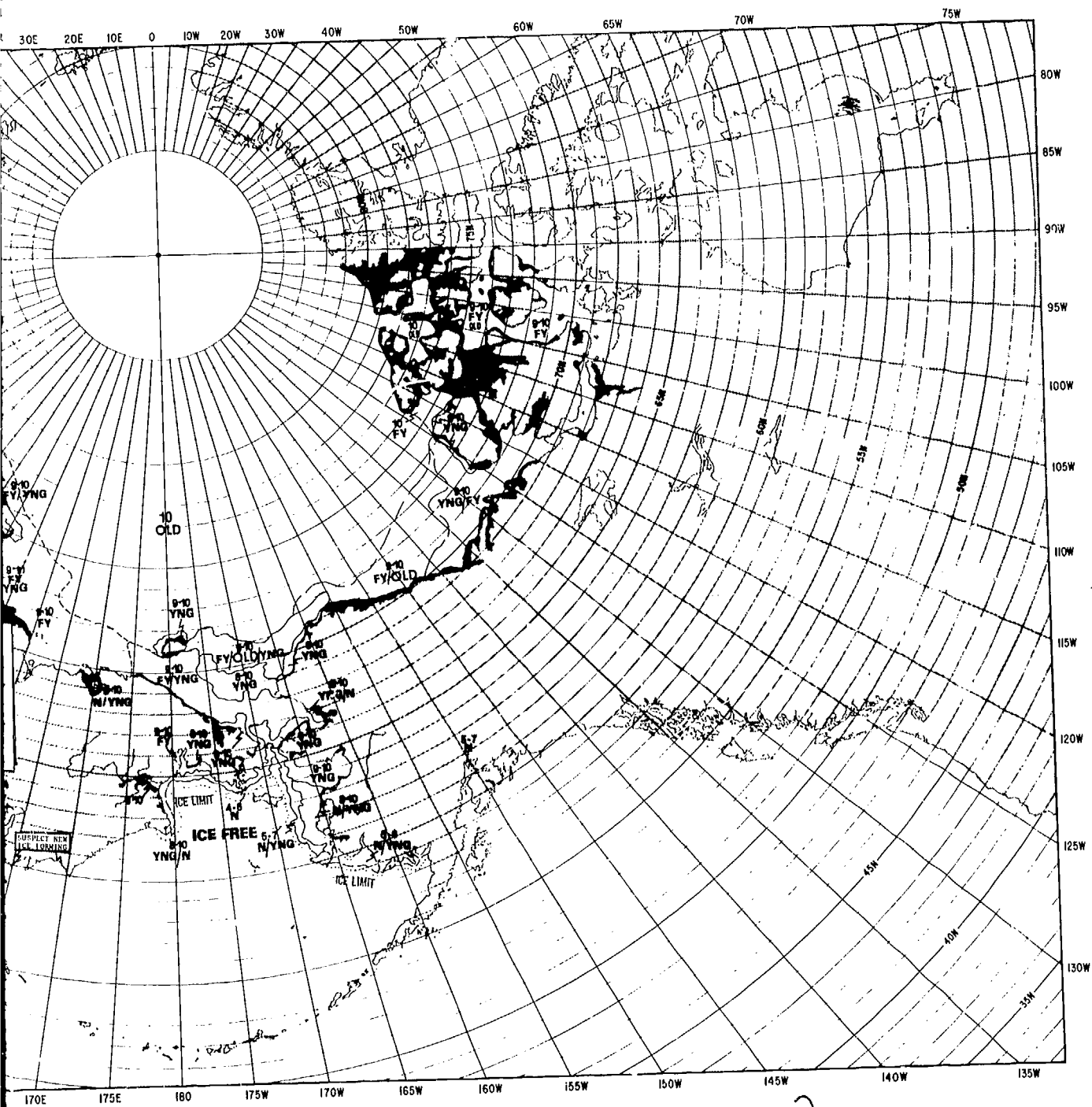
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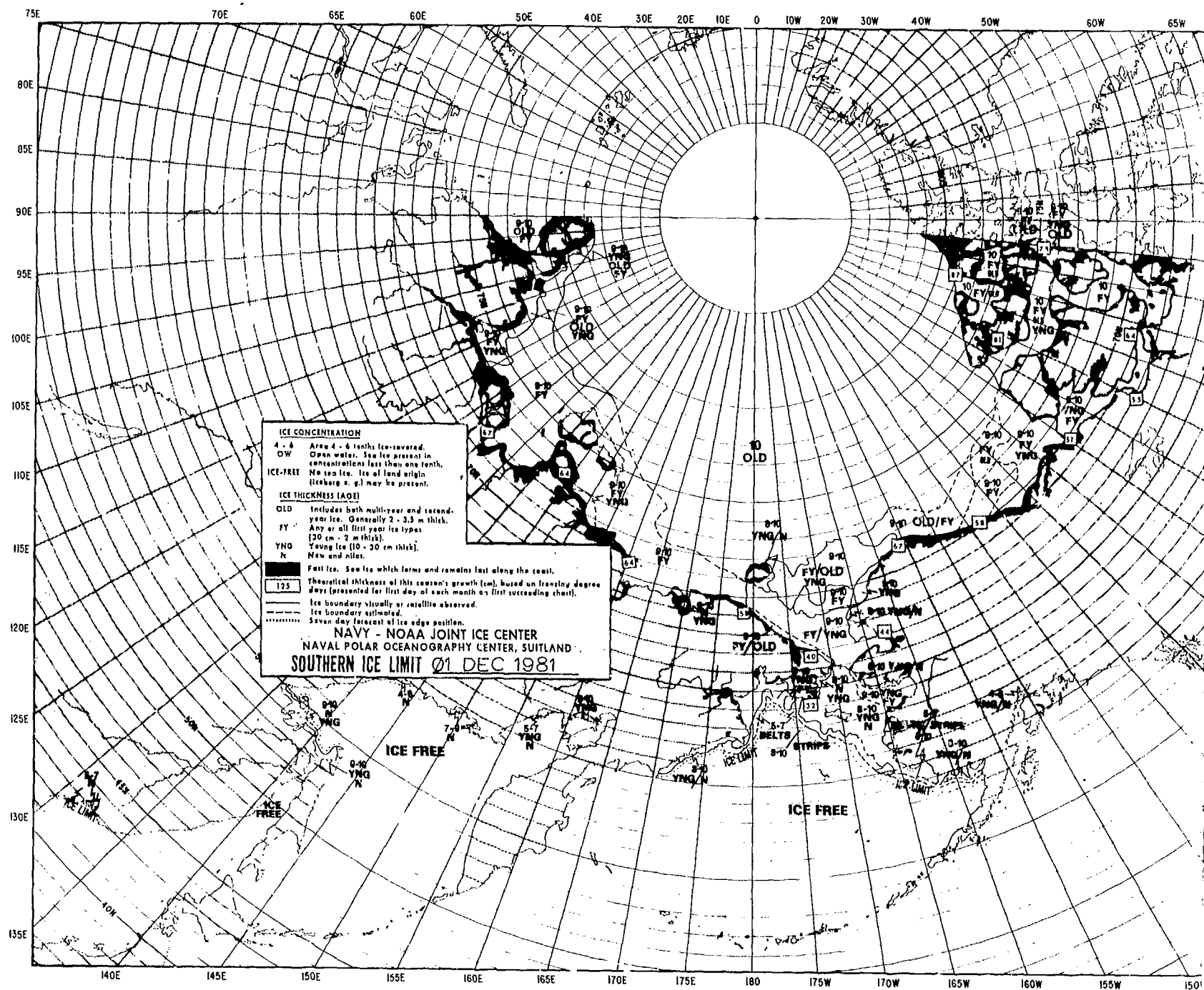


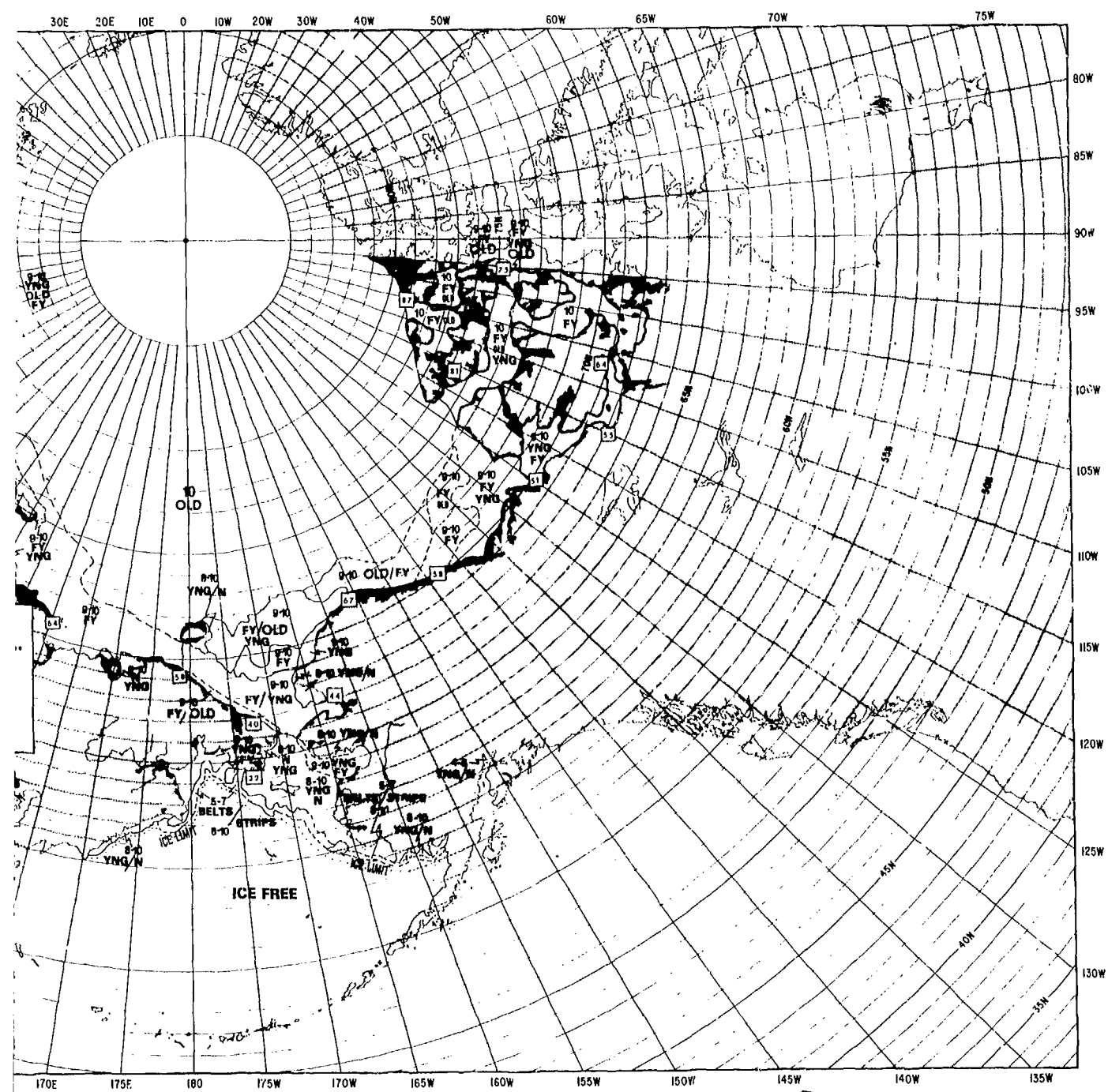




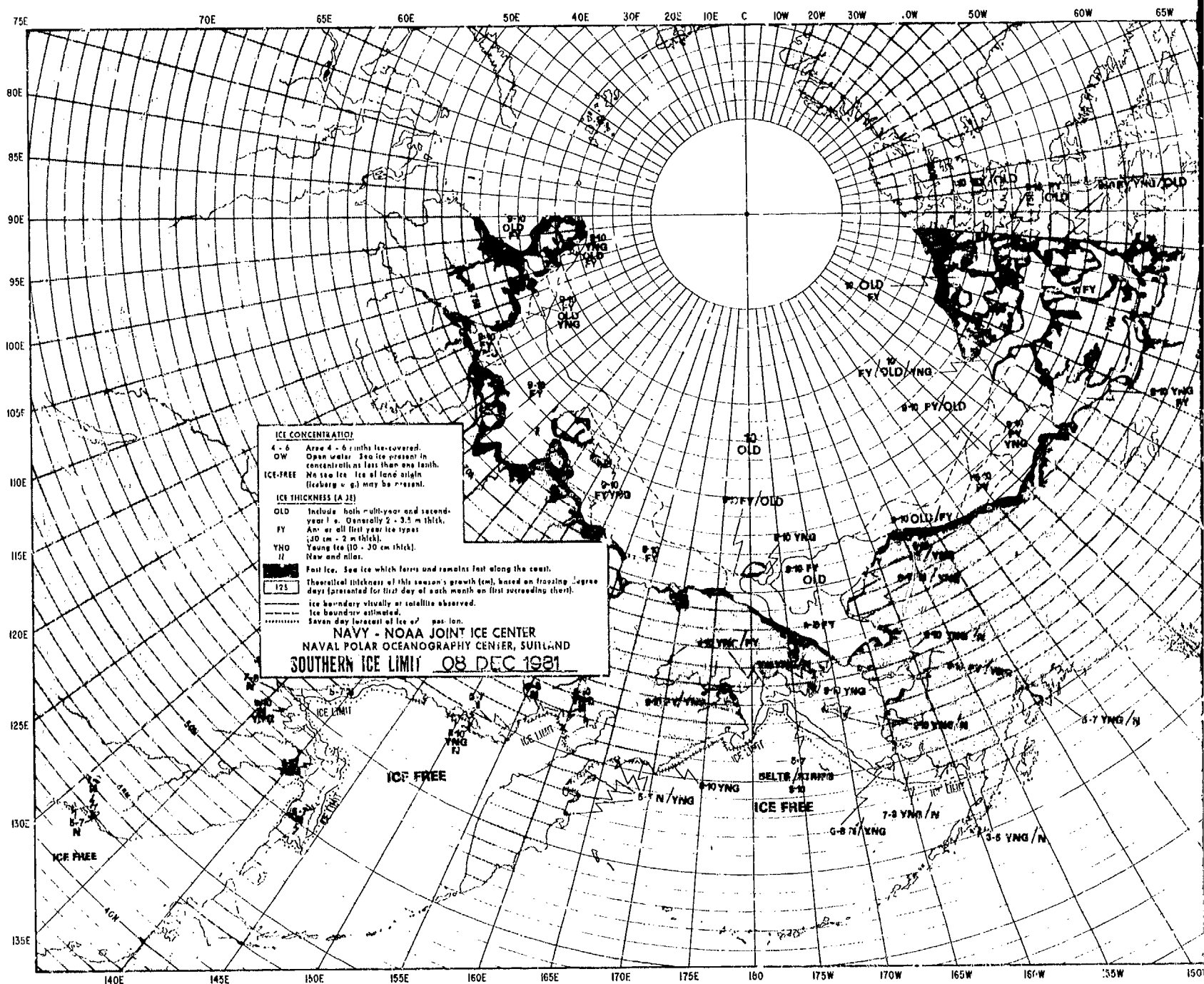


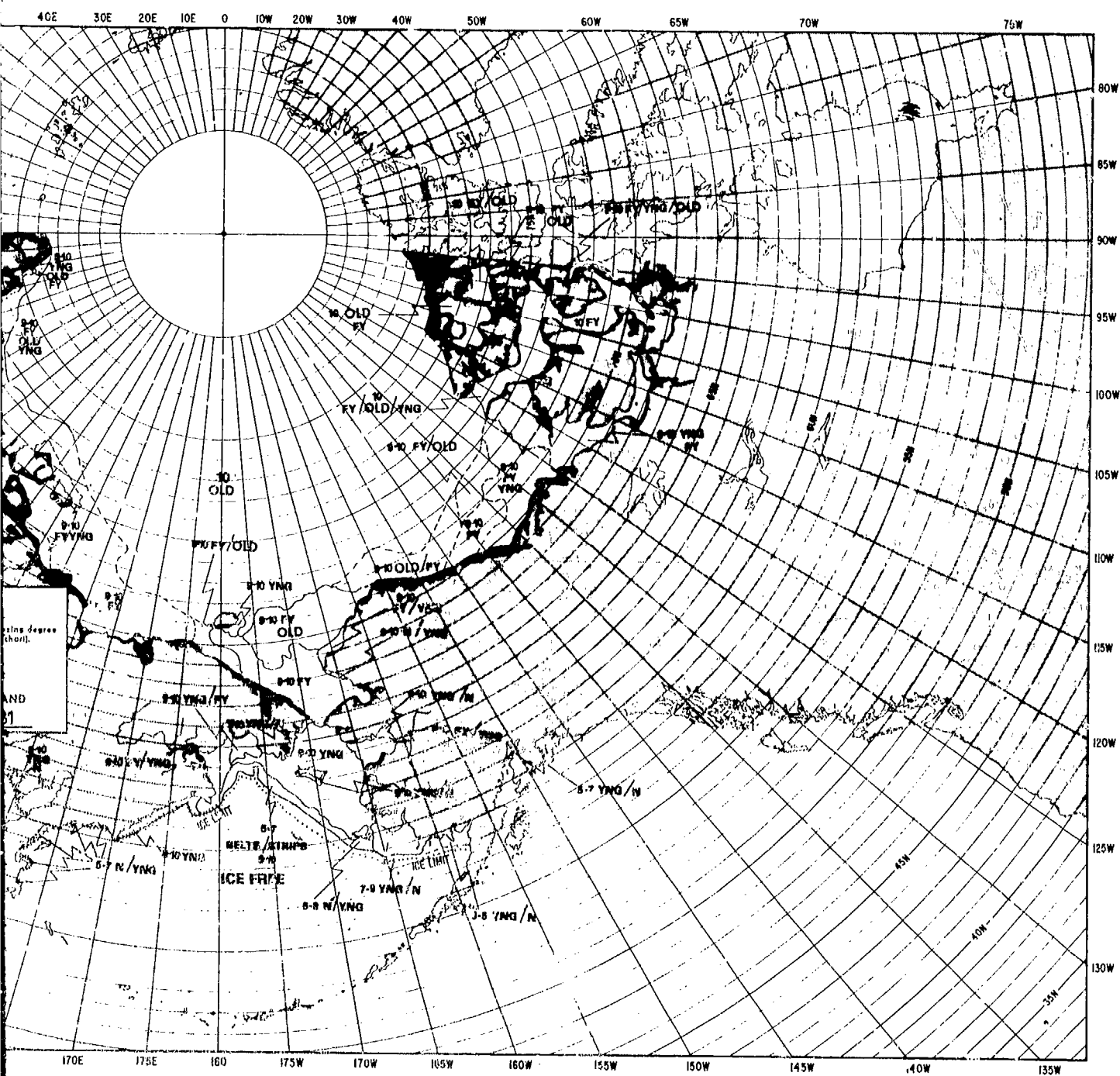




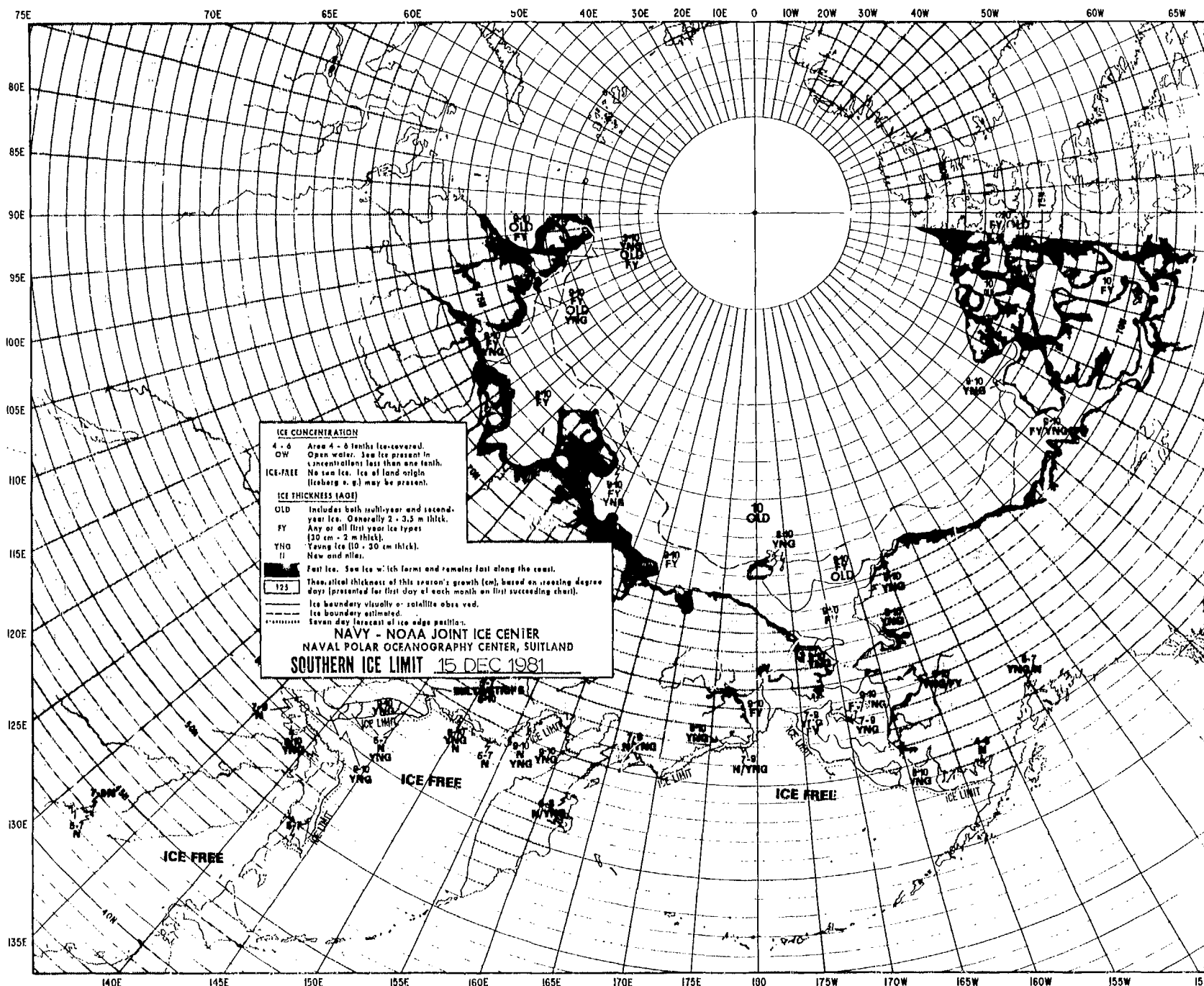


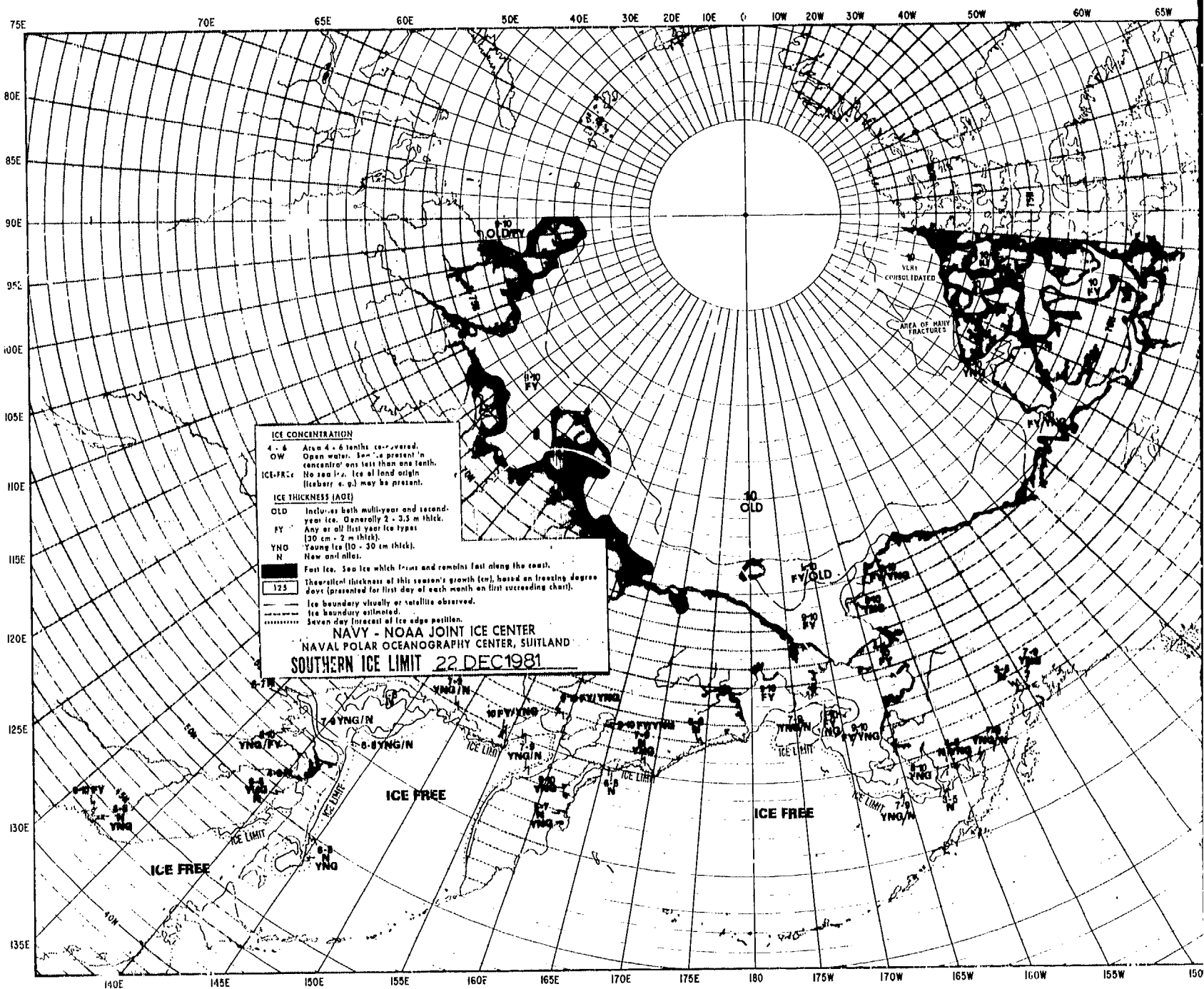
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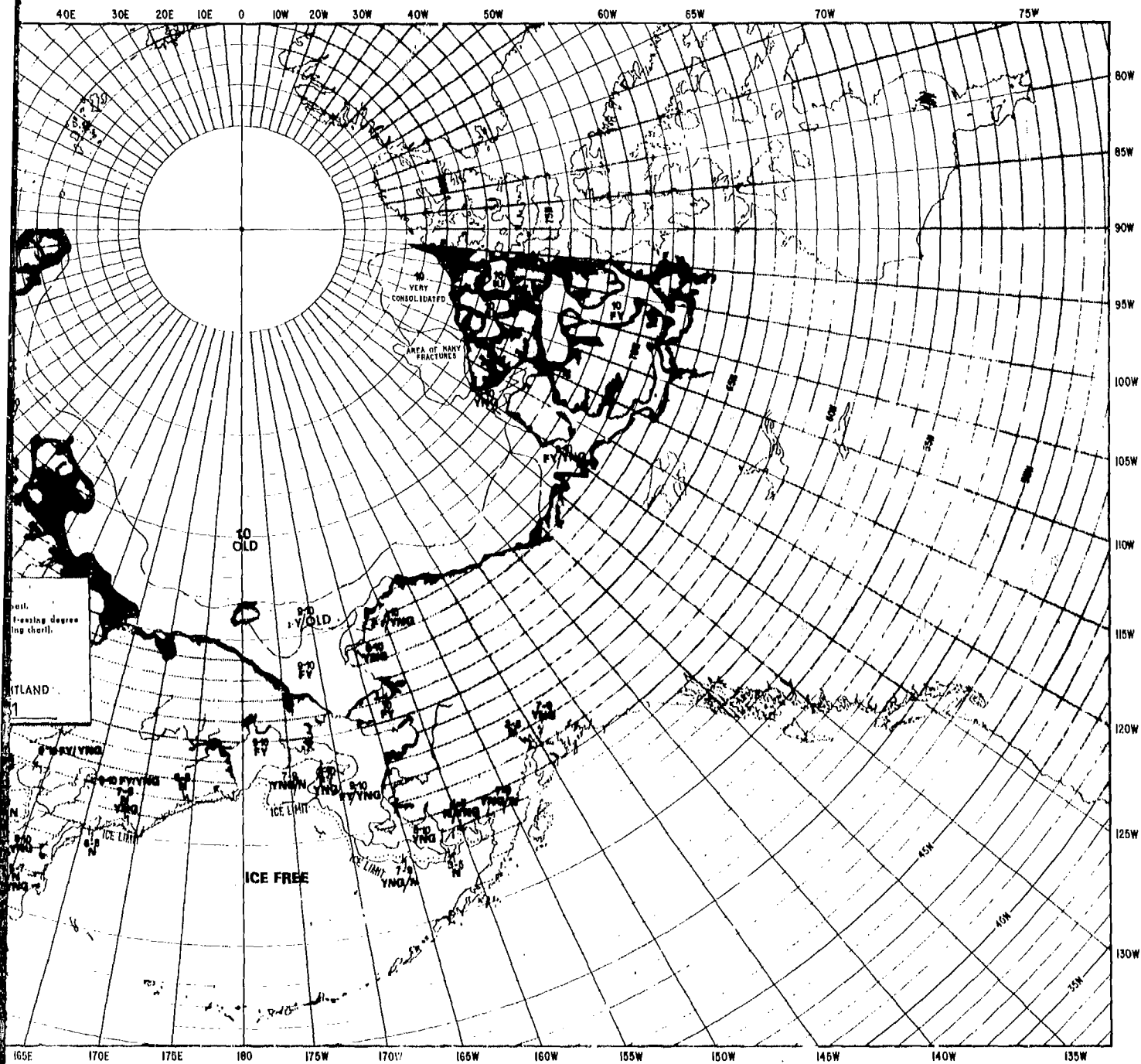




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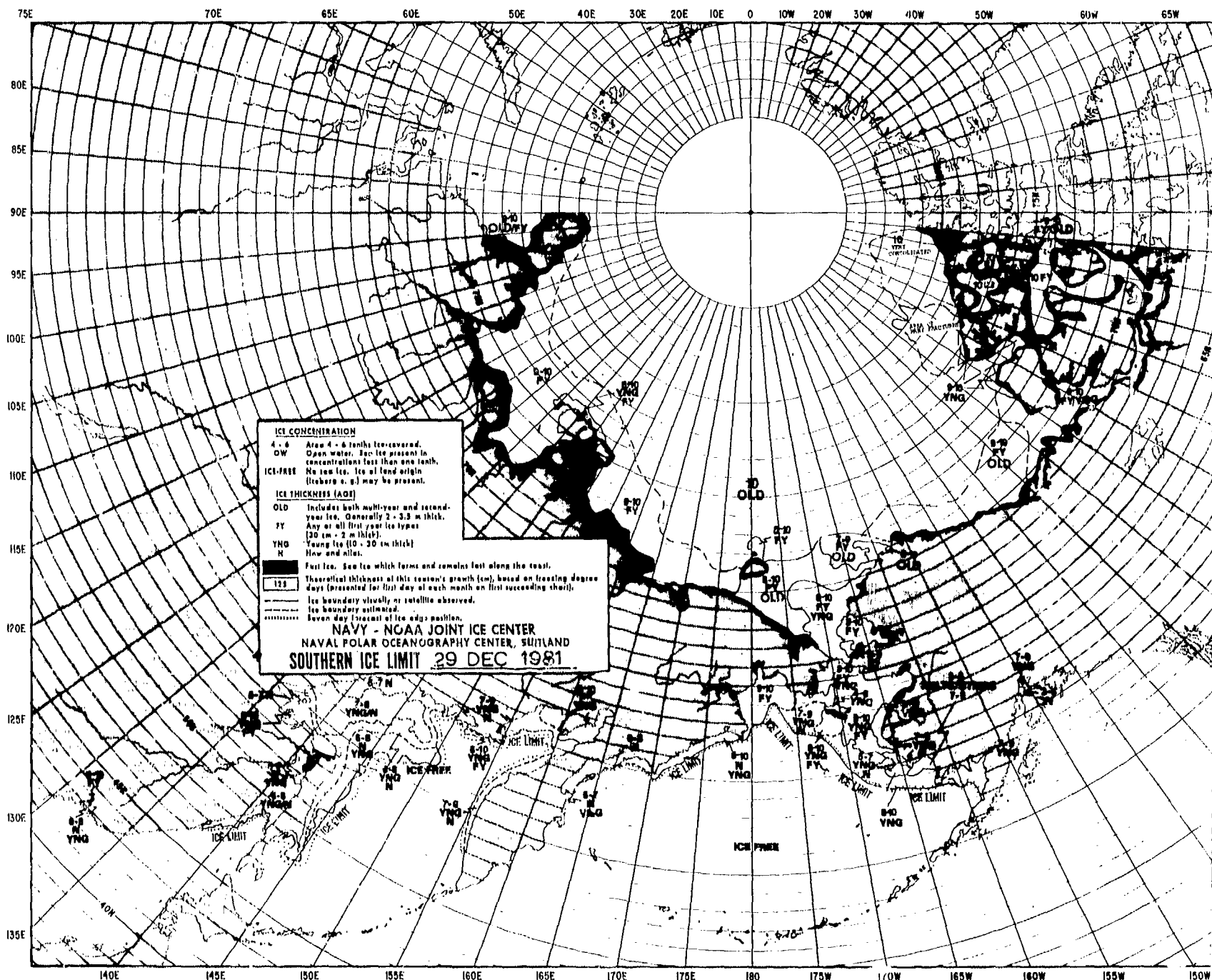


TABLE I SATELLITE DATA UTILIZED DURING 1981

Time Period		Satellite Remote Sensing			Resolution	Coverage
From	To	Sensor Platform	Sensor Type	Spectral Region		
1-81	12-81	NOAA-6	AVHRR HRPT/LAC		1km	Regional
			VIS NIR IR IR	0.55-0.68 um 0.73-1.10 um 3.55-3.93 um 10.5-11.5 um		
			GAC VIS IR	0.55-0.68 um 10.5-11.5 um	4km	Global
7-81	12-81	NOAA-7	AVHRR HRPT/LAC		1km	Regional
			VIS NIR IR IR	0.58-0.68 um 0.73-1.10 um 3.55-3.93 um 10.3-11.3 um		
			GAC VIS IR	0.58-0.68 um 10.3-11.3 um	4 km	Global
1-81	12-81	NIMBUS-5	ESMR	1.55 cm	25 km	Global
1-81	12-81	NIMBUS-7	SMMR	0.81 cm 1.66 cm	50 km	Global

Abbreviations and Acronyms

AVHRR - Advanced Very High Resolution Radiometer
cm - Centimeter
ESMR - Electrically Scanning Microwave Radiometer
GAC - Global Area Coverage
HRPT - High Resolution Picture Transmission
IR - Infrared
km - Kilometer

LAC - Local Area Coverage
NIR - Near Infrared
SMMR - Scanning Multifrequency Microwave Radiometer
VHRR - Very High Resolution Radiometer
VIS - Visual
um - Micrometer

SUPPLEMENTARY

INFORMATION

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CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
	AD A118893	
4. TITLE (and Subtitle)		5. TYPE OF REPORT & PERIOD COVERED
Eastern-Western Arctic Sea Ice Analysis 1981		Reference Report 1981
7. AUTHOR(s)		6. PERFORMING ORG. REPORT NUMBER
Naval Polar Oceanography Center, Suitland, MD		
9. PERFORMING ORGANIZATION NAME AND ADDRESS		8. CONTRACT OR GRANT NUMBER(s)
Naval Oceanography Command Detachment Federal Bldg Asheville, NC 28801		
11. CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
Commander Naval Oceanography Command NSTL MS 39529		
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE
		May 82
		13. NUMBER OF PAGES
		108
		15. SECURITY CLASS. (of this report)
		Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
Sea ice, polar ice fields, satellite imagery, concentration, stage of development, fast ice, concentration of thickness, theoretical thickness, Arctic		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
These are approximately 7-days analysis of sea ice prepared by the Naval Polar Oceanography Center, Suitland, MD. Included are ice concentration and ice thickness (age).		

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S-N 0102-LF-014-6601

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